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INTERNATIONAL PHOTOGRAPHER

HOLLYWOOD

FIFTH YEAR

JANUARY 1934

VOL. 5
NO. 12



25 CENTS
A COPY

An excellent example of production on wheels. Note how the "mike" is kept in line with the camera perambulator.

PHOTOGRAPHED BY
GASTON LONGET

MOTION PICTURE ARTS AND CRAFTS



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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 5 HOLLYWOOD, CALIFORNIA, JANUARY, 1934 No. 12

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A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing, Film Editing, Sound Recording, Projection, Pictorialists.

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PART OF THE PROGRAM FOR FEBRUARY

Jack Smith promises a log of his past two years in the Orient, featuring his adventures in China.

Earl Theisen will offer one of his most interesting articles—History of Hollywood's Early Studios.

Associate Editor, Charles Felstead, continues his instructive series on Sound Recording with Chapter VI.

Karl A. Barleben, Jr., F.R.P.S., will add to his growing fame with another fine article: Understanding the Miniature Camera.

Art in Motion Pictures by May Gearheart, Supervisor of Art in the Los Angeles City Schools—a most interesting study of its kind.

Fred Westerberg will be in with the eleventh installment of his now famous Cinematographer's Tables. Don't miss these. Keep your files complete.

Paul Harmer will have something good for the gentry who go after pictures in the hot countries—How to Build a Temperature Controlled Portable Laboratory.

Our Miniature Department Editor, Augustus Wolfman, will present his second illuminating article with interesting illustrations. And remember Mr. Wolfman answers questions.

Technical Editor, Lewis W. Physioc, presents The Story of Photography in Brief Outline, the best piece of literature of its kind and first presented in the Souvenir of the International Photographer. It is recommended to everybody interested in photography—amateur or professional.

OUR COVER FOR JANUARY

This still was shot by Gaston Longet during a pause in a scene of "Half Shot at Sunrise," an R-K-O feature starring Wheeler and Woolsey. The subject is nothing new to the studio habitues, but will be interesting to all who like to know how the picture makers do things.

Left to Right—At camera Harry Wild; in front of him, Willard Barth; seated on perambulator, Nick Musuraca; at camera on right Harold Wellman; standing beside Wellman, Clifton Kling. The remainder of the assembled multitude were late in reporting.



EDITORIAL

Once upon a time—maybe as long as fifteen years or more ago—there dwelt in Hollywood, the Picture Towne, a group of youngsters who called themselves Cameramen. They were employed by the men who produce motion pictures and they were a fine, straight-shooting, upstanding, intelligent, clean cut outfit.

Their middle name was loyalty and they were the most energetic lot anybody ever saw.

They were the props (not the properties) of the growing young industry and no matter who else might, for some reason or other, shirk the job, usually through lack of knowledge, the Cameraman, like the Roman soldier, was always at his post ready for any emergency, even to direct, dress a set or play a part—if his assistant was equal to the job of cranking.

The Producers found by experience that the group called Cameramen could be trusted in any event and that their skill, courage and artistry saved many a picture from the morgue.

Time rolled on. The Producer was getting to be rich and powerful and somewhat forgetful of the "early days" when he and the Cameramen were the best of friends. The Picture Towne was growing up and becoming famous and the Cameramen, more or less left to themselves, began to talk about getting together in some sort of club or association where they could exchange ideas and, by talking shop, could solve their mutual problems.

And so it befell that they passed the word around and formed an organization which they called a society and thus they began to enter upon the second phase of their brilliant and useful career.

By this time the Producers were waxing richer and, one may say, a bit arrogant. To him and his kind the Cameraman began to be just one of the hired hands about the studio.

He was on the pay roll and, therefore, entitled to some sort of recognition, but that was all, and so the Cameraman herded by himself and spent his valuable time putting beauty into the pictures and developing processes by which miracles were wrought. And here let it be said that the magic of the skilled cameraman is the most wonderful magic in the world, for the picture is what the cameraman gets and the man behind the camera is the real magician.

And so the Producer became very proud of the work of his Cameramen and enthusiastically boasted about it, but when the Cameraman, conscious of his increasing use-value, humbly suggested that it would seem only commensurate with his services to be paid a reasonable advance over the old "take what you can get" scale, so that his family might live better and be a bit happier, he was told to run along and be a good boy.

But the Cameramen were not like that. With a lively sense of their own importance—of their use-value in that great structure called the Motion Picture Industry—the Cameramen began to compare notes and what they found out was sufficient.

Men were sadly overworked and the majority were sadly underpaid. Committees were appointed to see what could be done and contact was actually made with the powers that be among the people who make the pictures.

What was deemed, by the best minds among the Cameramen, to be a fair and equitable basis of agreement between Producer and Cameramen, for the adjustment of differences, was drawn up, submitted to the cinematographic body and considered a first class representation of the Cameramen's case.

This was placed in the hands of a committee with instructions to put it up to the Producers—and the battle was on.

The tactics of the Cameramen was to go after the Producers and get them to sign this document, which was called a "Code of Ethics," while the tactics of the defense, or the Producers, was to stall the Cameramen, but to do it in a nice, quiet, soothing kind of way.

During the exchanges (conversations they call 'em in diplomatic circles) the Cameramen were in dead earnest and they went at the job with their usual energy and intelligence. They felt sure they were on the way to success and that the bad old days of never ending work and inadequate pay were on the skids for good and, so flattering was the outlook, that scores of Cameramen who had held aloof from membership in the Society now hastened to enroll under that standard for the protection promised by the proposed Code of Ethics—and so it was.

Time passed. Many conversations were held, the Code was sent back time and again for amendment and the Cameramen, in their spirit of loyalty and trust, made concessions and did their all to get their Ten Commandments signed, but to no avail—ink was dear.

Now in those days there was a young man who happened to be at the head of the Cameramen's cohorts, by unanimous choice, and he was a fine, intelligent, aggressive and upstanding executive.

At last he grew weary of the status quo and announced that he would take the matter into his own capable hands and it looked like business.

There were daily conferences between the straightforward, sincere ambassador of the Cameramen and the affable and unctuous prime minister of the opposition, but to no avail.

And, in the meantime, certain Cameramen had stood on the sidelines and watched the game. They hoped that the Code, by this time more resembling a football than anything else, might be signed, but as time flew on they lost hope and looked about for a true solution of the problem.

They found it in the form of a Labor Union, did these determined Cameramen who had watched from the sidelines and, sure enough, that was the true solution.

They found that because of the unlimited opportunities offered them through an affiliation with labor it was possible to more effectively handle their economic affairs. They learned that through the I.A.T. S.E. & M.P.M.O. they would build a friendship among 2,500,000 affiliated individuals, who have since grown to 5,000,000.

They learned that through such an association there was not a village, town or city to which their employers could send them wherein labor was not represented—wherein friends did not reside.

They learned that not only was the manual laborer their friend, but the skilled laborer and the organized artists as well.

The educators, too, were organized under the great banner of the American Federation of Labor and they found as well that their labor card was an open sesame to places previous inaccessible.

It healed the sore places, barred nobody possessing the necessary qualifications for membership, provided for protection to Cameramen and Producers alike, at home and abroad, satisfactorily settled the wage problem, brought about over night far better working and living conditions than the Cameramen had hoped to attain through their Code of Ethics and, within an incredibly short time, established an orderly set up that has endured, grown and flourished for five and one-half years, and internationally respected.

But the prosperity of the Cameramen began to irk the Producer and there were differences as to hours

(TURN TO PAGES 16 AND 17)

THE NEWSREEL WORLD

By RAY FERNSTROM

As I sit here at the end of another year, I cannot keep from contemplating the newsreel of the future, especially the shooting of news through this medium during 1934.

Is the old element of *surprise* going to return?

Is newsreel material going to be more colorfully reproduced on the screen? That seems to me to be the next logical step in newsreel progress. Sound came and slowed up the coverage of news from both the portability angle and novelty of coverage, with but one or two exceptions.

The popularity of Fox Magic Carpets proves that more kinds of news could be shown with pleasant results.

As to color in newsreels, look at the success of Walt Disney's Symphonic Shorts. Now that a practical three-color process is here why not shoot "feature news" in this perfected manner? Think of the added beauty of such old stereotype stories as "Niagara in Winter Garb," "Bavarian Girls in Festivities of Spring," etc.

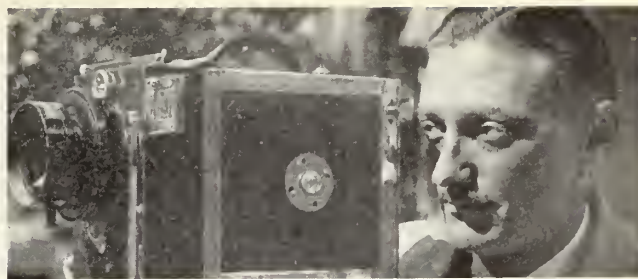
Do not try to tell me it is impractical and pass it off *with that*. It is practical, even if more expensive. More money will have to be spent to pull newsreels out of the doldrums of stereotype. When such nationally read writers as Robert Benchley start to criticise the "down in the rut" run of newsreel coverage it is about time something came to pass.

I have just talked to Mr. Ball, of Technicolor, and Ed Estabrook, two excellent authorities on color movies, and have found the following to be facts:

1. Color can be shot on a single system newsreel recording outfit just as at present.
2. Any newsreel cameraman can shoot three color pictures.



The "Three Musketeers" of the newsreels at the Pan-American Railways. Left to right: Joe Gibson (Universal), Mrs. Gibson; James Pergola (Fox) and James "Buck" Buchanan of Paramount. Pergola and Buchanan are ready to take off for the firing lines of Cuba, while Gibson remains behind convalescing from his recent Havana experience.



3. No trouble of any kind will be experienced in splitting the beams of light.

4. Prints can be knocked out as fast as black and white.

If that isn't food for thought?

What is News?

Look at your daily paper. It is a NEWS-paper, yet what do you find? Articles on cooking, articles on care of children, advice to the lovelorn, travel articles, music news, etc. Doesn't that indicate that newsreels could spread out much more in coverage of interesting happenings throughout the world?

The fact that newspapers feature the personalities that "write up" the news indicates that people would be interested in the men that shoot the newsreels. Why not feature a trip made by Geiskop or Alexander or Oliver, on tour to various and out-of-the-way corners of the globe, letting each cameraman throw his personality into each story. Each will give his personal angle on coverage, manner of build-up and supply his own voice in many instances.

Almost anywhere in the world laboratories are to be found. Let the boys shoot a wide range of subjects, finish them alone after their own ideas and let them mail in the finished film. I'll just bet you would see a world of excellent entertainment filled with the surprises always found OFF THE BEATEN PATH.

Some day we will have a new kind of newsreel instead of five newsreels practically all alike. What would happen if news-stands sold newspapers and magazines all ALIKE in coverage, personalities and subjects?

What are the differences in various newspapers published in your town?

Personalities, who write the news, I'll wager. Yes, there are a couple of personalities talking in the newsreels and these boys stand out and make those reels *better*.

But no newspaper personality writes the entire paper; why should one name talk an entire newsreel? It is granted, and an accepted fact that newsreels are a most popular feature of every movie program, but are the newsreels holding their fans as they should? No! The Silly Symphonies, the Magic Carpets are cutting into that popularity more each day. Shorts are getting better, but are the newsreels?

Look at several issues of any newsreel made at various times during the last six years or more and I'll foretell that you will get a surprise as you look back. I tell you the newsreels have been standing still while other shorts have been going ahead rapidly adding novelty, surprise and applied elementary psychology.

With but little effort our newsreels of tomorrow can be here today or at least 1934.

A very prosperous New Year to you all. May you make the best of every opportunity and if none come knocking at your door, go out and get them. Then all your New Years will be happy.

The Old Swede,

RAY FERNSTROM.



TEACHING MICKEY MOUSE TO WALK

By EARL THEISEN

Honorary Curator
Motion Pictures
L. A. Museum

BEFORE me is a wood carving of Mickey Mouse made by the noted carver, John Cerisoli. It is one of my prized possessions. It shows the little human mouse as he is to each of us the world over. There "Mickey" stands, with chesty pose and arms akimbo, with a so-wise eight year old grin. He is exuding the spirit of a pert youth who has just done something or other.

There he stands beckoning me to chase him, or re-do with him some of the things I did long ago. Walt Disney has made him the personification of all that is young in us.

On the screen he takes us through all his troubles and victories. He is so human that it is difficult to realize that he is only a drawing photographed on motion picture film.

To make a cartoon move; to animate Mickey Mouse is not a mysterious thing. It is a process that anyone can understand. A cartoon studio in many respects is like a real-life studio. In both studios there are four general departments or elements. First, a story or scenario, characters or stars to enact the story, a director, and a setting to serve as a background for the story.

Those very few and fortunate persons who visit Mickey's studio look about for him or a model of him; but in vain. It is hard to "act your age" as you would say, and refrain from getting down and looking under the tables for at least some vestige of "our mouse."

Like a youngster, I am all eyes, staring everywhere, anxious not to miss a single item. Just as I am certain that I have discovered the darkened corner where Mickey is hiding and I am intent upon it, out walks a blinking cat. A near giggle is stopped. There are cats everywhere. They are in all sizes and colors.

My hunt for Mickey is stopped when I am told that he never appears before the camera in person, but does so as a cartoon painted on a sheet of celluloid. And instead of sets made by a carpenter, of wood, as they have in the real-life studios, the cartoon set is a painting by an artist on water color paper.

First, Walt calls together a "gag-meeting" which is actually in the form of a lunch that lasts all afternoon. Herein they organize a story idea. Now with a conception of the story they start out to build the plot and various sequences. A cartoon scenario differs from the conventional studio scenario in that it is in two parts, one part telling the story step by step during every inch of the film and the other part describes and notes all sound and music. These two parts are matched by musical beats; each beat requires a certain length of film and for each beat Mickey Mouse is required to do a certain bit of action. The reason for the two scenarios is that the picture part of the story cannot be photographed with sound. The cartoon sounds are recorded independently on a separate strip of film and then later it is "synchronized" to the picture.

The cartoon director is known as the "layout" man.

As the term implies, it is his duty to lay out the story for the artists to draw. He makes rough sketches of the characters, illustrating how they are to do the things called for in the story. He also makes background sketches which are painted on water color paper by an artist. A group of artists, who are known as the "animators," takes the rough sketches of the story and begin to draw. They make cartoon drawings by the thousands in order to show the motion. In fact, it is necessary to draw from 10,000 to 12,000 separate pictures for a cartoon movie of the average length. This average length of six or seven hundred feet, by the way, is seen in the theatre in seven minutes. It takes about 100 artists two weeks to make a sufficient number of drawings to make a cartoon movie.

These drawings which are known as "original" drawings then go to another department where they are traced to sheets of celluloid. They are traced to celluloid for a reason that I'll explain presently. In the meantime Walt is teaching Mickey to be a good mouse; he is showing him new stunts and reading to him from Emily Post.

Now we have two things completed; the backgrounds and the cartoon stars on celluloid. These go to the camera department to be photographed. The cartoon camera is like the regular studio camera,—all movie cameras have two cranks, one that will take a foot of film or sixteen "frames" as they are known, and another that will take just one frame for each turn of the crank. The cartoon cameraman uses the crank that takes only one frame. The camera is anchored on a framework and is focused upon a table. The reason for this is because the backgrounds are laid on this table and the celluloid characters are laid on top for photographing. This table is equipped with an air pressure device that holds the drawings steady during the photographing. Too, it presses the celluloids with the pictures of the characters into firm contact with the background painting.

Now to explain how a cartoon is made to move. It is not a feat of magic, nor is it a mysterious accomplishment of Walt's. If you look at a piece of film you will see sixteen tiny photographs for each foot. Upon close examination it is found that where there is action the camera has recorded it in progressive poses. As the camera eye "saw" the action it recorded it stage by stage in different positions.

Let us suppose that Mickey Mouse is to be photographed doing a bow on the stage. To show this the cameraman would have a painting of the desired stage and a series of pictures of Mickey on celluloid. The cameraman would lay the picture of the stage on the camera table. Upon it he would lay a picture of Mickey standing in a straight pose. When the transparent celluloid with the cartoon of Mickey is laid over the stage painting, he appears to be standing on the stage. Now a single photo is taken with the movie camera. The celluloid picture of Mickey is now removed and replaced by a second celluloid of him. This second celluloid picture shows him in a position where in he is leaning slightly forward. This is photographed. This process of photographing the pictures of Mickey Mouse over the stage painting continues until the bow is completed. In this manner the bow is photographed in pose after pose as he leans forward. To depict a bow requires about twenty-four different poses or about one and a half feet of film. When the different poses are projected at high speed in the theatre, they blend together and give an illusion of motion. The process of

photographing the cartoon step by step continues until the end of the picture.

In the meantime, another department is making the sound effects and music. This is done in a large sound stage. Here the musicians hover about a microphone. On

set in a frame for door slams, a barrel swishing against taut canvass furnishes wind noises, an electric fan sounds like an airplane, an egg beater like machinery. They have cow moos, dog barks in all pitches, or chick conversation. Everything.



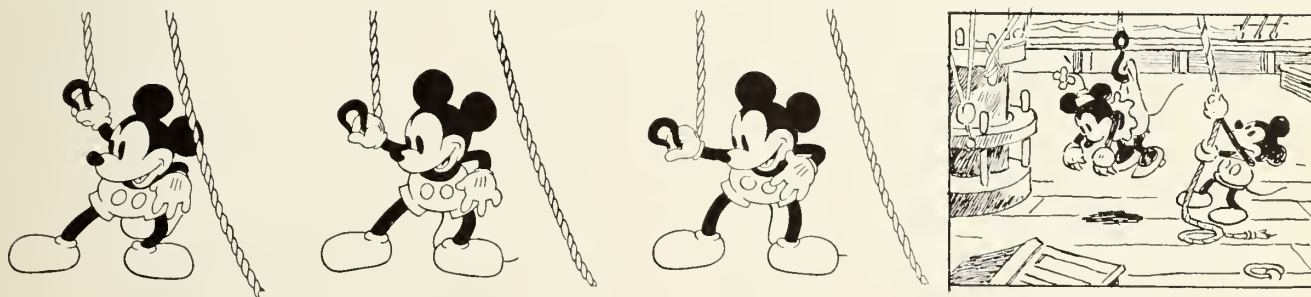
Original background painting from Mickey's latest "Shanghaied." The cartoons of Mickey Mouse drawn on celluloid are laid over this for photographing.

their heads are ear phones bringing to them the ticking sounds of the metronome. Contrary to popular belief, they do not watch the picture on the screen and make sounds accordingly. Instead they follow the cartoon manuscript which designates the sounds for each inch of film. For example, the eighth note of the 326th foot in the picture requires Mickey to say a certain word. The manuscript carries that information. And when the head phones tick off that portion of the film, the person who does Mickey's conversation starts his lines. He must be punctual, too, because if he did not start exactly on time, Mickey would open his mouth to say something and the words would not be heard. Walt, by the way, does the Mickey Mouse conversation.

All the sounds that are heard in the cartoon are made in this manner. Usually the incidental sounds are made by devices constructed for the purpose. They have a door

When the sounds are recorded, the film is "dubbed" on to the picture part of the cartoon. Now it is ready for a preview. These first showings are famous and are a part of the social life of Hollywood, but they are something more than fun. Here the picture receives close criticism and any part not up to Mickey Mouse's style is marked for the limbo of bad film.

As I write this, December 18, information comes to me that Walt Disney is being presented with the medal of "The Parents Magazine" for the greatest contribution to youngsters during the year. The ceremony was attended at the studio by so many that the walls seemed to bulge and one looked to see arms and legs pushed through the windows. Walt received the additional good news that Mrs. Disney had presented him with a baby daughter, "Diane Marie." Now she animates Walt; while he animates Mickey.



Three progressive poses of Mickey that would be used to show him lowering his arm. On the right is a sketch which designates the action of the story as made by the cartoon director.

EYEMO'S GREAT WORK IN AFRICA

Martin Johnson, noted African explorer, recently purchased a 48-speed Bell & Howell Eyemo camera for making animal movies from airplanes. This brings his Eyemo battery up to seven machines.

From Nairobi, British East Africa. Mr. Johnson writes: "The new Eyemo has now arrived and I have already tried it out on the airplane trip from Mombasa to Nairobi with wonderful results. It happened that we passed over many herds of elephants, and I got some fine shots with the new camera."

Among his other Eyemos, Mr. Johnson has one with motor and 400-foot magazine, which is also used in air-

plane work; two with special triggers for photographing wild animals automatically; and three more as accessories to his battery of Bell & Howell standard cameras.

The special trigger Eyemos were first used for Mr. Johnson's gorilla shots in the film "Congorilla."

The arrangement is such that an animal passing before the camera strikes a string which releases the trigger and starts the film in motion. At the same time a flare is ignited electrically. This permits pictures to be taken automatically at night or in the deepest jungles. Sometimes the camera is set up and left for a week or so before getting the desired pictures, but eventually something worth while is sure to be "shot."

MINIATURE CAMERA PHOTOGRAPHY

[In introducing Augustus Wolfman to our readers we feel certain that very few of them have not heard of him before. Mr. Wolfman started out in life as a pharmacist having received the degree of Ph.C from the Long Island University, Brooklyn College of Pharmacy. His interest soon turned to photography and, in 1928, he entered the New York Institute of Photography where he took courses in both motion picture and still photography. There he became acquainted with Mr. Karl A. Barleben, Jr., F.R.P.S., and has been associated with Mr. Barleben ever since. Mr. Wolfman soon began contributing articles on photography to various magazines, his writings having appeared in "Photo Era", "American Photography", "Camera", "Amateur Movie Craft", "American Cinematographer", "Nature Magazine", etc. In October 1932 he became technical editor of "Personal Movies". Being associated with Mr. Barleben it was natural that Mr. Wolfman became engaged in, and experimented with miniature photography when it was first introduced. His interest is still unwavering, and he is of the opinion that miniature photography has a considerable future being "tomorrow's photography practiced today."—Editor's Note.]

EXHIBITING his usual foresight, and tendency to keep up with the trend of modern times, Mr. Snyder, our editor has decided to include a miniature photography department in the INTERNATIONAL PHOTOGRAPHER. Perhaps it may appear to many that Mr. Snyder has been lagging behind times for not running a miniature department at an earlier date, but the reader must remember that up to a comparatively recent time miniature photography, as an established branch of photography, has been boiling and rounding to form in the pot of experimenters. It has now emerged from the experimental laboratories of photographers, and claims a position not only side by side with other branches of the science of photography, but well nigh at the head of it.

Miniature photography is here to stay. It has ceased being a novelty in the hands of amateurs, and has gained admission in many commercial and scientific fields where the highest of precision is required. The reason is quite evident. Miniature cameras today represent the highest precision instruments in the photographic field. They are little jewels of precision, accuracy, and results—results that relatively far surpass those produced by larger cameras. Consider a small instrument which can be easily slipped into a pocket, and which is capable of producing negatives which will yield flawless prints 11 by 14 inches and even larger.

Perhaps the greatest credit for the remarkable progress of miniature photography can be attributed to the firm of E. Leitz Inc., and the Leica Camera which they sponsor. This camera is undoubtedly the most versatile photographic instrument in the world. It can accommodate over 300 accessories which will adapt it to every photographic endeavor. A description of this camera would be superfluous since its popularity is of such an extent that it is known to every miniature camera enthusiast.

The Leica represents the cine type of miniature camera—it accommodates the usual 35mm. motion picture film. We also have such fine precision instruments as the Contax and Peggy, which use the 35mm. motion picture film. The instruments mentioned take a picture the size of a double frame of m.p. film—1 by 1½ inches. The Contax is gradually increasing its range of versatility. It now accommodates 10 lenses of various focal lengths and apertures, and reproduction devices are also available. There are also such cameras as the Memo, and Korelle-K which accommodate cine film but produce single frame pictures ¾ by 1 inch. The Korelle-K magazine holds sufficient film for 100 exposures.

By
Augustus
Wolfman



The miniature camera enthusiast also has at his disposal a host of fine roll-film cameras. Many, such as the Rolleiflex, National Graflex, Brilliant, Superb, Exakata, etc., are of the reflex type. The Rolleiflex is an outstanding member of this class. It reflects the pride its manufacturers take in the instrument which they produce. Carl Zeiss lenses, and the new type of Compur shutter are standard equipment. The Rolleiflex originally embodied the principle of having a large aperture finder lens. It also has a unique window, as is illustrated, in which the lens and shutter settings can easily be seen. Accessories are constantly being added to the Rolleiflex to increase its versatility.

Besides the reflex types the miniature camera worker can avail himself of the usual type of roll-film camera in a miniature form. Amongst these we have such reliable instruments as the Makinette, Foth Derby, Baby Ikomat, Perkeo, Vistus, Prominent, Dolly, Pypille, Cameo Ultrix, Weeney Ultrix, etc. At first this type of camera made only the half vest pocket size negative. Now we have advanced miniature cameras which produce full vest pocket negatives, a square format, such as the Rolleiflex whose negative measures 2¼ by 2¼ or 1½ by 1½, etc.

I have made this discussion of cameras rather brief because constant advertising has brought these instruments to the attention of the photographer.

Allow me to digress for a moment and mention that this department is intended solely for the benefit of the readers of INTERNATIONAL PHOTOGRAPHER, that is, they are free to write in requesting information on certain topics, or make suggestions for the type of material to be included. Most of the workers in the miniature



The Rolleiflex showing the window through which lens and shutter setting can easily be seen.

camera field are actively engaged in experimentation and research, to make miniature photography and even better means of photographic expression than it is. We are desirous of making this department a medium of exchange of ideas, theories, and findings of these workers. Acknowl-

edgment will be made to the individual submitting such material. Do not hesitate to submit any material which you may think will be of interest to other miniature camera workers. It is only through such an exchange of ideas that definite progress can be realized. We are also interested in obtaining photographs made with miniature cameras, which will illustrate the type of work that can be produced with small cameras. Some individuals may hesitate to send in material thinking that what they have to offer will not be of any interest to other photographers. I will ask that readers of this department banish such thoughts and submit all material they have to offer. Allow us to judge whether your material will be of interest to other readers or not, and bear in mind that you will be given full credit for your offering.

Let us now consider some concrete branch of miniature photography. The choice of film seems to puzzle many small camera workers. It is surprising that most workers are not acquainted with all the films available for their camera. They have knowledge of only the more popular brands, and are entirely ignorant of other makes. I am listing below practically all the roll films and cine films suitable for miniature camera work, which are available to the photographer.

Motion Picture Films

Agfa Fine-Grain Plenachrome (Orthochromatic), Agfa Superpan (Panchromatic), DuPont Orthochromatic, DuPont Panchromatic, DuPont Special Panchromatic, DuPont Superior (Panchromatic), DuPont Micropan (Panchromatic), DuPont Infra-D (Ortho-Pan), Eastman Kodak Orthochromatic, Eastman Panatomic (Panchromatic), Eastman Kodak Panchromatic, Eastman Kodak Type 2 (Panchromatic), Eastman Kodak Super sensitive Panchromatic, Gevaert Superchrome Express (Orthochromatic), Gevaert Orthochromatic, Mimosa Extrema (Orthochromatic), Perutz Orthochromatic, Perutz Persenso (Orthochromatic), Selo Orthochromatic, Selo Panchromatic.

Roll-Films

Agfa Fine-Grain Plenachrome (Orthochromatic), Agfa Superpan (Panchromatic), Eastman Verichrome (Orthochromatic), Eastman Panatomic (Panchromatic), Eastman Supersensitive Panchromatic, Gevaert Orthochromatic, Gevaert Superchrome Express (Orthochro-

matic), Perutz Persenso (Orthochromatic), Voigtlander (Orthochromatic).

Although more cine films are available, the possessor of the roll-film camera will notice that with one exception (Infra-D) he has at his disposal every type of film available to the cine film camera owner. Roll-films can also be secured in orthochromatic, panchromatic, and supersensitive panchromatic types. Infra-D film is sensitized to infra red rays. Although very sensitive to the red end of the spectrum, this film is practically blind to green, hence its classification as an ortho-pan film. It is used to simulate moonlight effects, and to penetrate haze when photographing from the air, or where it is essential to record detail at great distances.

Haze in the atmosphere is caused by the droplets of moisture which reflect and scatter the shorter wave-lengths of light (ultra-violet, violet and blue). The longer wave lengths of light (red, and infra-red) pass through the atmospheric particles of moisture without being deviated from their course. Since films are generally greatly sensitive to the shorter wave-lengths of light, haze is readily reproduced. If Infra-D film is used in conjunction with a deep red filter, all blue, violet and ultra-violet light will be kept from being reproduced, whereas the red and infra-red light will act upon the film. All haze is eliminated and great distances are reproduced in detail. The filter factors for this film in bright sunlight are as follows:

FILTER	FACTOR
K2	16
A	64
F	64
70	64
88	90

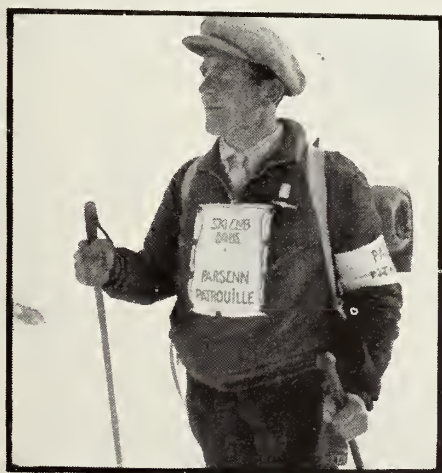
When used without a filter Infra-D film behaves like an orthochromatic emulsion.

The night effect produced with Infra-D film in conjunction with a deep red filter, is due to the fact that the sky is normally blue, is kept from being recorded on the negative, and in the subsequent print it therefore appears black. Trees usually reproduce with their green leaves white, appearing as if they were bathed with soft moonlight. This is due to the fact that the green leaves reflect a great amount of infra-red light, and therefore greatly affect the film.

Infra-D film, as well as other cine films, may be purchased either in daylight loading spools, or in bulk. Following the line of least resistance, as is customary with us humans, it is a fact that the majority of photographers resort to daylight loading spools rather than purchasing their film in bulk. You may as well be informed that buying your film in rolls of 100 feet will bring down the cost of negative material to a negligible amount. E. Leitz supplies a useful little gadget with which the film can be easily loaded onto the spool. It is merely necessary to supply yourself with two or more magazines and keep them loaded with film, and you will always have negative material at hand. You can also obtain from them a trimming guide with which the film can be cut in the correct fashion to be loaded into the camera. Although it may seem trivial let me remind you that it would be advisable to wash, and thoroughly dry your hands before loading bulk film into magazines. A small dirt smudge left on the film will ruin a negative. Also handle the film only at its edges at all times. Even though you may have diligently washed your hands, the action of loading the film may cause them to perspire. Moisture coming in contact with the delicate emulsion is apt to cause spots in the subsequently developed negative.

Some photographers may raise the objection that they wish to try the various films available, and to purchase them all in quantities of 100 feet, the films would be long outdated before they would have the opportunity of exposing such a large quantity of sensitive material. I do not object to an individual experimenting with various films. After having tried them all, he should select one or two films that are best suited to his purpose, and by

(Turn to Page 18)



Portrait shot by the Rolleiflex Camera.

matic), Perutz Persenso (Orthochromatic), Voigtlander (Orthochromatic).

Although more cine films are available, the possessor of the roll-film camera will notice that with one excep-

THE WONDERS OF HESSERCOLOR

New Process of Making Still Pictures in Natural Colors Bids Fair to Become a Box Office Stimulus.

One of the greatest advancements affecting the motion picture industry as a whole will be possible through the use of a new process of making still pictures in natural color, thus greatly improving the theatre lobby displays throughout the entire exhibitors' market. The weakness of motion picture advertising—in comparison to other major industries—is widely acknowledged.

Much of this is due to the lack of quality in still pictures from productions; this being specially noticeable when they are "hand colored" and lithographed or printed in various other methods for lobby display sets. It is not unusual to see a set of pictures in a lobby where obviously the girl's same dress is pink in one poster and blue in another.

These prints are naturally turned out cheaply—the expense in this direction has been pared down to an absolute minimum. Yet, particularly in theatres other than first run, the lobby stills are an all important factor in patron determination as to whether or not they care to see the picture that is being advertised.

This same fact holds true of the billboard lithographs; many of these are cheaply developed from motion picture stills, with crudities of coloring and printing that certainly do not do their fullest duty in bringing patrons into the theatre. National advertisers in many lines are using color photography, while the magazine pages are being more and more filled with advertising copy produced from natural color photography. Any effect that an artist, painting with a brush, can produce, is possible with modern natural color photography, and certainly the magazine covers already produced, of movie stars, are much superior to the paintings that adorn similar covers.

Perfected Color Process

Edwin Bower Hesser, one of the early members of Local No. 659, International Photographers, has returned to Hollywood after an absence of two years with his now perfected invention and method of producing natural color still pictures, the Hessercolor Process. To a group of officers and members of the International Photographers he displayed recently a selection of about fifty pictures produced by his method. These examples included everything from natural color portraits of Joan Crawford, Billie Dove, Barbara Stanwyck, Thelma Todd, Jeanette MacDonald, Janet Gaynor and other prominent stars, to interiors of surprising beauty taken aboard steamship and elaborate exteriors of architecture and classic gardens. Still life groupings for advertisements, such as Heinz products, fruits, baskets of orchids and cigarettes were remarkable for their fidelity to nature, while decorative head studies, for advertising purposes, showed a range of artistic effects using colored lightings that rival the variations of a painter's palette—it being possible to "paint with colored lights" just as in stage lighting.

Cameramen To Be Trained

Hessercolor Process is the result of a number of years of great effort, starting while the inventor was captain, Photographic Section, Signal Corps, U. S. Army. The first application was to aerial photography in color, primarily for military use. His efforts in recent years have been devoted to simplification in the all important matters of speed, accuracy and financial economy of operation, to make it practical for the motion picture industry.

On his recent visit to Local No. 659, Captain Hesser outlined his idea of operation to include the training of a

number of members of No. 659 in the skillful handling of the Hessercolor Camera, by which the pictures are taken on motion picture sets or in the portrait galleries of a studio; then turned over, undeveloped, for finishing in full color.

Hessercolor Camera

The Hessercolor Camera is a mechanical affair, by which three pictures are made in rapid succession, with proper filters, to produce blue printing, yellow printing and red printing negatives. These three negatives are taken in a total of less than three seconds; slight movement of the subjects, for instance, in a scene with many players, can easily be corrected in the printing.

The three negatives are printed separately on a new substance discovered and manufactured by Captain Hesser; impalpably thin, yet tough and flexible, it makes registration easy and certain. The printing of a picture, in the three colors, its superimposition and final blending—similar chemically to "firing" of pottery—is a matter of half an hour's laboratory work.

The final picture looks almost as if it were glazed; it has a very bright finish like decoration on china, making it particularly adaptable to reproduction in process plate engraving or any other commercial form of printing. Hessercolor pictures have been reproduced in many leading national ads in the past year, while Captain Hesser was in charge of the natural color photographic department of The New York Times.

Easy To Master

It is claimed that any skillful cameraman can learn to use the Hessercolor camera properly in two or three experiments; the resulting pictures, strange to say, have very little possibility of failure, if made on a properly lighted motion picture set. Naturally, the more highly developed arts of portraiture or poster-making in Hessercolor need special lightings in color; magazine covers, too, require the skill of an artist who knows the art of color-appearance in display work.

Scenic shots are particularly wonderful by this new method and while there are still certain limitations, as to exposure of two or three seconds, it is possible to get a "one-shot camera" which is instantaneous, though not as good in quality as three shot.

Several Types of Cameras

There are several types of Hessercolor cameras, in various sizes and types of mechanism, some of them taking upright portrait pictures and others in landscape proportion for stills on motion picture sets. The average time exposure for color stills on sets is about two seconds and even a movement of a person, if not too great, can be undetectably corrected in the finished print.

Practically every photographer is familiar to some extent with the workings of color photography; the photographing of a subject through minus-yellow, minus-red and minus-blue filters. This is carried out with great speed in the Hessercolor Cameras, which have a feature, for motion picture work, which permits photographing players wearing regular panchromatic make-up with brown lips so that the lips in the final print are red—without altering the relative value of the colorings of clothes or of the set.

It is also possible at all times to "step up" the red printing filament, so that a more natural flesh tint is obtained than is actually before the camera, when panchro-

matic standard make up is worn. Naturally, when a stage or "technicolor type" make up with red lips and rouged cheeks is worn, no artificial "stepping up" of the red is necessary or desirable.

Saves Time, Cost and Waste

Until the present time, with the introduction of the Hessercolor method, the majority of color prints have been made with superimposed carbon tissues which have to be manipulated under the most exact conditions of temperature, including an air conditioned room at almost freezing point. Great skill is required in all carbon tissue printing; the filaments are decidedly fragile and there is no opportunity to correct faulty registration. The very high cost of finished pictures in carbon methods is due to great time consumption, high cost of materials and large percentage of wastage—all three of these items being conquered by the Hesser plan.

Mosaic War Maps

Captain Hesser was the inventor of several aerial photographic devices used in wartime and his newest discovery is a color camera for aerial use, which will readily disclose camouflage or any tricks of the enemy used to conceal fortifications or troop movements. This is also a three-plate camera, but made in "one-shot"; examination of negatives and positives, through special viewing glasses, will tell an army commander secrets that would be unguessed by judging from an ordinary black and white aerial photograph. Maps can thus be made in full color—a mosaic, as they are called, in color, being much more valuable than in monotone. Great speed in making up the color prints for aerial work is possible by the use of the Hesser devices.

Another great field for this photography is in medical work, where an exact record of skin diseases, for instance, can be made for the illustration of text books.

Commercial Field Great

So far as the general public is concerned, the plans under way call for the equipping of several hundred studios throughout the United States with Hessercolor cameras; the regional centre nearest them being used for their color printing. All the photographer has to do is make the negatives and develop them in the specially formulated solutions for color. This will also apply to motion picture companies on distant location, but locally it will be more convenient to have the negatives developed in the Hessercolor plant. Three sizes of negatives are standard; 5x7, 6½x8½ and 8x10, while splendid enlarged prints can be made up to 14x17 inches from even a 5x7 original negative.

Remarkable Speed of Process

The remarkable item of speed in The Hessercolor Process was recently demonstrated by a finished color picture in process of making complete on paper, within four hours after the photographing of a scene, using film; the same process was reduced to one hour and four minutes with the use of glass plates. But because of the danger of breakability the regular method is to use panchromatic film; this is treated quite differently in developer from the ordinary stills. A central "printing plant" for Hessercolor is already being established in Hollywood and in this plant the color stills made by cameramen with each motion picture company will be developed and finished in color, the colorprints being ready on a twenty-four hour basis.

While the cost of color prints is necessary a great advance over black and white stills, they will serve a very definite purpose and, when contracts with lithographic concerns are revised, for the usage of color-stills instead of hand coloring, the cost will be readily absorbed by the savings made.

DON LEE STATIONS CELEBRATE SECOND ANNIVERSARY

Five Million Feet of Motion Picture Film Televised In Two Years

On December twenty-third, with a special five and one-half hour program, the Don Lee television stations W6XS and W6XAO celebrated their second anniversary of television broadcasting.

Two years ago, under the direction of Harry S. Lubcke, Director of Television for the Don Lee Broadcasting System, W6XAO became the first ultra-high frequency television station in the country broadcasting on regular schedule. Five months later, May 21, 1932, the first television image ever received in an airplane anywhere in the world was broadcast from W6XAO to a speeding Western Air Express tri-motored Fokker and viewed by over a dozen press representatives.

With the inaugural broadcast of W6XS on the first anniversary of W6XAO, this new 1000 watt transmitter was soon heard and received across the continent at Houlton, Maine. Immediately after the Los Angeles-Long Beach earthquake of March 10th, 1933, W6XS and W6XAO transmitted scenes of the disaster before the public was admitted to the stricken area, with the result that those who had television receivers saw the damage over television before they were allowed to see it in person.

Soon regular editions of Pathe Newsreels were shown, then Paramount trailers, shorts, and full length features, until at present nearly five million (4,824,000) feet of motion picture film have been televised on regular schedule. This is believed to be the largest television footage ever exhibited. Recently a record was set in bringing an event to the television screen, when the Stanford-USC Trojan contest of Armistice Day was shown three hours and forty-five minutes after the conclusion of the game.

The anniversary program started at 5:00 p. m. with a historical review of the subjects broadcast during the two year period, and included the first image broadcast, the one sent to the airplane, and others connected with outstanding events. It was followed at 6 p. m. by a current Pathe Newsreel, Paramount's "Hollywood on Parade," with Ginger Rogers, John Boles, Robert Woolsey, Johnny Mack Brown, Mary Pickford, Boots Mallory, and Dorothy Wilson, and a special edition of Paramount News. At 7:00 p. m. the full-length Paramount feature "Madame Butterfly" was broadcast starring Sylvia Sydney and Gary Cooper. The broadcast ended at 10:25 p. m. with the usual closing signal.

THE ASSISTANTS TALK IT OVER



"What do you think of personal liberty?"
"I'm in favor of it, but my girl won't see it."

MOTION PICTURE SOUND RECORDING

Chapter V



THE preceding chapter described the sound stage and the equipment used on it, and mentioned briefly the types of portable recording equipment employed for location work. This chapter begins the discussion of the permanent monitoring equipment that is associated with each sound stage.

The monitor man, who is also called the "mixer," or first soundman, has perhaps the most responsible position in connection with the recording of sound; for it is he who governs the volume and, to some extent, the quality of the sound that is recorded. The volume of sound, or rather its electrical equivalent, he regulates by means of his monitoring controls; and by locating the microphones so that they take advantage of the favorable acoustic conditions existing within a set, he is able to influence in a considerable degree the quality of the recorded sound.

Monitoring at its best is an art; at its worst the result is a confused jumble of sound that is decidedly unpleasant to hear. Monitoring requires a high sort of skill on the part of the monitor man, a skill that is developed most readily by intimate acquaintance with the monitoring equipment and with the acoustic conditions normally encountered in motion picture sets. In addition to that special skill, a monitor man must be resourceful and alert, and have a sincere desire to do good work regardless of the labor involved.

A theoretical knowledge of the fundamentals of acoustics and sound (the elementary discussion contained in Chapter III should prove sufficient) and broad practical experience in the monitoring of sound motion pictures are necessary requisites in the schooling of a successful monitor man. One other essential that the monitor man must have is tact; for only if he is possessed of that virtue can he secure the whole-hearted coöperation of the director and the technical staff of the picture on which he is working.

By

CHARLES FELSTEAD
Associate Editor



person of normal hearing. A knowledge of music and of musical instruments is not indispensable, although it is highly desirable; but an ear for music is a necessity for the monitor man who does orchestrations. As in any skilled labor, natural abilities make it easier for some men to become more expert monitor men than others.

The Permanent Monitoring Installation

The permanent monitor room that is associated with each sound stage is usually located adjoining the middle of one of the side walls of the stage. This monitor room is about twelve feet square; and its floor is about fifteen feet above the floor of the stage. The monitor man looks out onto the sound stage through three glass windows set in a sort of bay, like the bay window of a house. The windows are each constructed of two sheets of thick plate glass solidly mounted about four inches apart. The air space between the sheets of glass provides additional insulation against the passage of sounds originating on the stage.

The control desk for the monitor man is placed in the bay formed by the three windows in such a position that he has a clear view of the action taking place in both directions along the stage as well as directly in front of him. One side of the monitor room is open to a large room about thirty by fifty feet in size, the floor of which is on a level with the floor of the sound stage. This large room is known as the monitor theatre, or auditorium; and

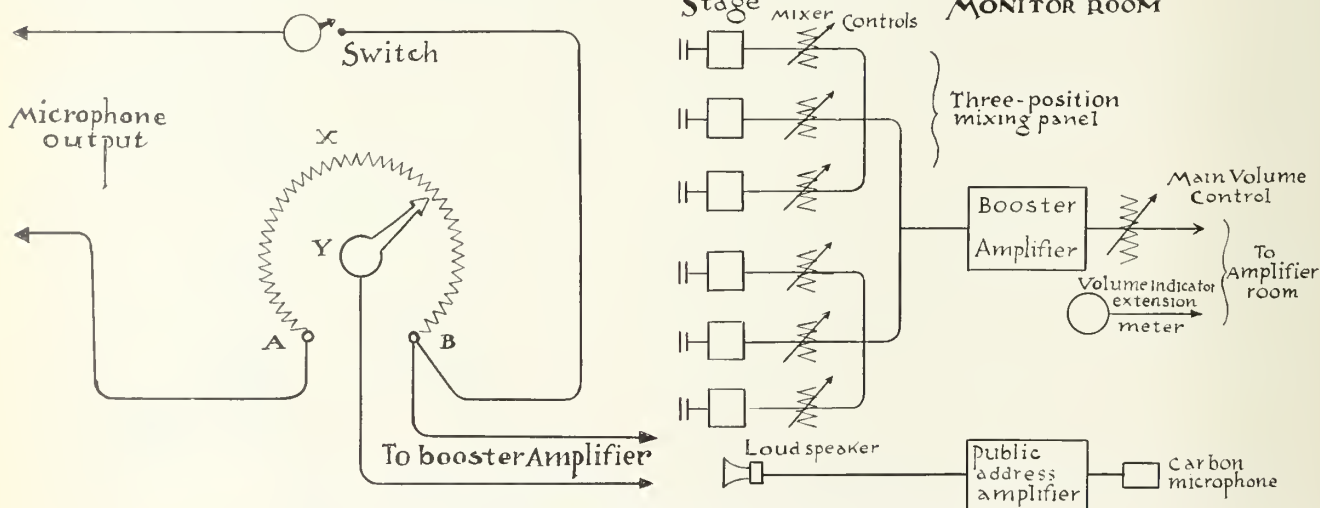


Fig. 2. Block schematic diagram of stage and monitor room.

Normal hearing is, of course, a possession of the most vital importance to the monitor man. If he is not gifted with normal hearing, he is likely to place his microphones so that he records more high-frequency, or perhaps more low-frequency, sounds than are pleasant to the ears of the

the two monitor horns are suspended in the far corner of it facing toward the monitor man's desk. The walls and ceiling of the monitor room and monitor theatre are treated with acoustic materials that absorb sound, and the floor is covered by a rug laid over a thick padding of hair-

felt; so there is very little reverberation within either room.

This monitor theatre is provided for the sole purpose of simulating normal theatre sound conditions as closely as possible; and its construction and acoustic treatment are such that time of reverberation within it is practically the same as that of a small motion picture theatre filled with an audience of average size. This arrangement per-

instead of the two panels that are standard for the permanent equipment; but otherwise there is little difference between the two installations. The monitor man must of course wear headphones when using the portable monitor desk, because it is usually placed in position on the set beside the camera where the monitor man has a good view of the action. This type of monitoring equipment would supersede all other types because of its convenience, were



Center—The monitor desk in operation on a set. Courtesy Universal Pictures Corp.

Right—The portable monitor desk, showing the amplifier and junction box for microphone cables beneath the opened door.

Courtesy Universal Pictures Corp.

Left—A portable monitor booth. The junction box for microphone cables is clearly shown. The small horn of the monitor man's public address system may be seen on top of the booth. Courtesy Paramount Productions, Inc.

mits the monitor man to hear the sound he is monitoring under conditions similar to those which will exist when an audience listens to the recorded sound being reproduced in a theatre. In this way, the monitor man works under acoustic conditions that are as nearly normal as it is possible to make them.

The Portable Monitor Booth

Where there are so many sets left standing on the stage that their intervening walls obscures the monitor man's view of the set in which shooting is being done, a portable type of stage monitor room, or monitor booth, is often used. This monitor booth is a small, thoroughly sound-proofed room about five feet square and seven feet high mounted on regular automobile wheels; and resembles closely the old-style camera booth. It is just large enough to hold the monitor man, his monitoring controls, and a small horn.

A large, double-thickness window with an air space between the sheets of glass is provided in the front of the monitor booth to allow the monitor man a clear view of the action on the set; and access to the booth is through a closely-fitting door of double-wall construction in the rear. Insulated and shielded cables equipped with suitable plugs are used to connect the monitor booth with the main recording system. The monitoring equipment in the booth is essentially the same as that in the permanent monitor room. Batteries to supply current for the monitoring amplifier are carried in the booth. The monitor booth is preferred by some monitor men because it can be moved right up beside the cameras on the set to the position most advantageous for observing the action; and when so used it permits much more intimate monitoring work.

The Portable Monitor Desk

A new type of portable monitor desk is now becoming popular with monitor men. This is a desk with a slanting front something like the permanent control desk; but it is mounted, together with a chair and a box for batteries, on a platform equipped with large casters. Only a single three-position mixing panel is used in the portable desk,

it not for the unsatisfactory reproduction that the headphones provide on anything other than straight voice recording. The arrangement of the microphone and system cables will be apparent from the accompanying photograph.

Monitor Horns and Units

The two monitor horns installed in the permanent monitor room are of the exponential, air-column type, and have lengths of twelve and fourteen feet, which assures good reproduction of the bass notes in recording music. The greater the length of the air column, which is measured from the diaphragm of the horn unit to the opening of the bell, the lower the frequency response of the horn. That is, the fourteen-foot horn will reproduce lower musical notes than will the twelve-foot horn.

The horn units are of the electro-dynamic type, which has a high factor of efficiency in converting energy from electrical to sound form. These units operate on the same principle that accounts for the functioning of the dynamic speakers used in radio receiving sets. The theory involved will be explained in another chapter. Field current is supplied to the units through series resistors from a twelve-volt source. These horns and units are of the same type as those employed in motion picture theatres.

The monitor horn installed in the portable monitor booth is of the same type as those used in the permanent monitor room, but it is smaller, which results in a loss of response to the low-frequency end of the sound spectrum. This small horn is equipped with the same type of horn unit that is employed on the large monitor horns. The horn is mounted on the back of the monitor booth in a box-like affair built onto the outside of the booth beside the door. This arrangement is provided so that the opening of the horn will be at the greatest possible distance from the monitor man's ears. Because of the poor low-frequency characteristic of the small horn, the monitor booth is never used when music is monitored. For the recording of dialogue and sound effects, however, the lack in low-frequency response of the small horn is not objectionable.

The Mixer Controls

The control portion of the monitoring equipment is quite simple, being made up entirely of potentiometers, with key switches for disconnecting unused controls. Three potentiometers and the associated three key switches are mounted as a unit on a metal panel; and two mixer control panels of this type are employed in the normal installation. The two panels are built into a cabinet with a slanting front, which stands on the desk in such a position that it is convenient for the monitor man to reach the controls.

An idea of the functioning of a potentiometer and its key switch may be obtained from Figure 1. Actually, a more complicated impedance-matching potentiometer is employed, in order that the output impedance of the microphone will be exactly matched to the input impedance of the monitoring amplifier at all adjustments of the potentiometer; but the simple potentiometer shown illustrates the theory much more clearly. *X* is a circular winding of resistance wire, which has a resistance, in this case, of 200 ohms; while *Y* is a metal blade attached to the control knob. By turning the control knob, the blade can be made to connect with different points on the circular resistance element.

When the blade is at the point *A*, the full output of the microphone is fed to the monitoring amplifier, and the resistance element is simply shunted across the line. But when the blade is at the point *B*, none of the output of the microphone is supplied to the monitoring amplifier. At intermediate points on the resistance element, different proportions of the microphone output energy are supplied to the monitoring amplifier; the nearer the blade is to the point *A* the greater the amount of energy transmitted by the potentiometer. The switch is provided to permit the potentiometer and the microphone with which it is associated to be disconnected from the monitoring amplifier.

One potentiometer and its key switch are required for each microphone; so a six-position mixing panel provides controls for a maximum of six microphones. The switches turn off the microphones that are not in use; and the potentiometers regulate the volume of sound (in the form of electrical energy) that is supplied to the recording system by each microphone. The potentiometers are carefully constructed and will not cause noise in the system if they are kept clean. The key switches are designed not to produce clicks when operated, so that microphones can be turned on or off during the shooting of scenes without interfering with the recording.

The Monitoring Amplifier

The electrical output level of a condenser or dynamic microphone is so low that it is necessary to amplify it by a monitoring amplifier after the energy has passed through the mixer potentiometer. The normal circuit arrangement is shown in Figure 2. Squares represent the microphones and the amplifier, and pairs of wires are represented by solid lines. The conventional symbol is used for the potentiometers.

The monitoring amplifier is also called a pre-amplifier, or "booster," amplifier. There are two types of audio-frequency amplifiers in general use for this purpose. One type of amplifier employs small "peanut" tubes in a resistance-coupled circuit of three stages; while the other type uses larger tubes in a two-stage impedance-coupled circuit. The three-stage amplifier is equipped with only a single switch for regulating the amount of gain in the amplifier. But gain control on the two-stage amplifier is provided by two tap switches, one of which regulates the gain in steps of five decibels each and the other provides fine adjustment in one decibel steps.

Meanings of Technical Terms

Terms which are not clear will be explained in a later chapter; but it will be mentioned here that the term *gain* is merely another name for amplification. The word itself

is almost self-explanatory. Just as a current that has passed through a resistance is said to have suffered a *loss*, or diminution in value, current that has been increased by an amplifier is said to have received a *gain* in value.

Electrical *level* is a measure of the current at any point in a circuit with reference to some other point in the circuit, and is not necessarily defined in any unit of measurement. The level of an electric current at the output of an amplifier is higher than the level at the input because there has been a gain in the amplifier. Likewise, the electrical level at the output of a resistive device, such as a potentiometer or attenuation network, is lower than at the input because there has been a loss in the resistance.

All of the terms just defined are concerned with *speech current*, which is the current generated by the sounds picked up by the microphone. It is called speech current because of the convenience of that term; although the sounds that produce the current might be noises or musical notes as well as speech sounds. It is this speech current that is dealt with in sound recording; for it is this current that, after suitable amplification, causes the variation in the recording device that produces the sound record on film.

Comparison of Amplifiers

The three-stage booster amplifier is equipped with meters for reading the plate and filament current of all tubes; but the two-stage amplifier is without meters. Both amplifiers have rheostats for adjusting the filament current. These rheostats must be kept particularly free of dust and corrosion, because any noise produced in this low-level part of the circuit will be enormously amplified. Just as for the microphone amplifiers, a separate set of plate-supply batteries, as well as filament batteries, are often used with these booster amplifiers to prevent electrical coupling through the batteries with the main amplifiers. These are known as "local" batteries. Sometimes, however, it is possible to operate this amplifier directly from the main system batteries without feed-back troubles.

The two-stage amplifier is to be preferred for this work, despite the lower gain it provides, because the "peanut" tubes of the three-stage amplifier are inclined to be more microphonic than the larger tubes. This means that if the tubes are set into mechanical vibration by a jar or blow, the electrical "singing" produced in the amplifier by the vibration of the tube elements will be much more troublesome and objectionable for the "peanut" tubes than for the larger tubes.

Necessity For Pre-Amplification

It is necessary that the electrical level of the speech current be raised at this point in the recording circuit instead of waiting until it has reached the main recording amplifiers in the amplifier room. If it were not boosted in the monitoring equipment, the speech current would be at such a low electrical level when it reached the main amplifiers that it might be below the noise level of the system. By noise level is meant the level of the annoying electrical currents generated in the recording system by tube hiss, by minute amounts of electrical leakage, and by a multitude of other tiny sources of disturbances in the system.

If the speech current is permitted to fall to the noise level, it becomes necessary to amplify the noise as much as the speech current when the speech current is raised to recording level. The monitoring amplifier serves to increase the speech current to a level that is high enough to over-ride any extraneous electrical disturbances that are picked up in the monitoring circuit and by the transmission line carrying the speech current down to the main amplifiers.

The next chapter will conclude the description of the permanent monitoring equipment and will explain the usual procedure in coordinating the activities of the sound department with those of the picture company on the sound stage.

A Serious Problem Beautifully Solved

COMPOSITE photography presented film manufacturers with a new and serious problem. Eastman has solved it. The Ultra-fine grain of Eastman Background Negative yields background shots that can be projected and rephotographed with genuinely beautiful and completely convincing results. And this new film has other properties . . . especially surprising speed . . . that will stimulate the cameraman to new achievements in general cinematography. Brulatour and Eastman technical staffs stand ready to help you.

J. E. BRULATOUR, Inc.

New York

Chicago

Hollywood

EASTMAN
Background Negative

NOTES ON MARINE PHOTOGRAPHY

By KARL A. BARLEBEN, JR., F.R.P.S.



HOTOGRAPHY is becoming increasingly popular in all types of activities. Unfortunately the amateur yachtsman has not as yet taken full advantage of photography in his hobby except in rare cases, and this is somewhat difficult to understand, for surely the water and boats make most attractive subjects for picture-material. It is possible that the average "pleasure sailor" feels that a camera is too awkward and cumbersome a device to fit into the scheme of things on board small boats. This is a serious mistake, for the modern camera is so tiny in size that it occupies little or no space. Cameras of this type are known as miniature cameras, and are represented by well-known makes such as the Leica, Rolleiflex, National Graflex, Contax, Foth Derby, and Makinette. These cameras make tiny negatives, it is true, in keeping with their diminutive size, yet pictures on paper from these small negatives can be made in excess of 3 x 4 feet—think of it! Nor is the technique involved in producing such revolutionary results difficult or expensive. It can be readily understood, then, that the yachtsman has available a number of precision cameras at his disposal which are not only highly satisfactory from a photographic standpoint, but small and compact as well.

Complete descriptions and prices of these small models may be secured from the manufacturers or from photographic dealers. The point to be stressed here is that these cameras are ideally suited to boat photography at the least cost, least fuss and bother, and least stowage space. Every boat lover should investigate the merits of these small cameras—he owes it to himself, for just think back at the marvelous chances for pictures that you have already experienced. Wouldn't you like to have an album in which a pictorial record could be preserved of the various picnics, cruises, and races you visited or participated in? Of course you would.

Going still stronger in photography, the amateur motion picture might be mentioned. Cameras such as the Bell and Howell, Victor, Simplex, and Cine Kodak accommodate the popular 16 mm. film, and like the miniature still cameras, are extremely easy on the pocket-book, yet deliver pleasures and delights that cannot be duplicated.

Photography in small boats or large, is now brought to the point of perfection. The time is not far off when the yachtsman will no more think of leaving the shore without his small camera than without his pet binoculars. Life has, in these days, been made easier and more comfortable. The boat enthusiast can have a small radio aboard, complete culinary equipment, and other means of comfort and ease, despite the small size of his boat. The same holds true for photography. Just as boats have been made smaller, more compact, and incidentally more efficient, so have cameras undergone a similar change.

There are a few points which might often be met with in the ordinary course of marine photography. It might be well to just briefly mention a few for the benefit of those who are not familiar with modern photography, especially when applied to pictures of boats and things of the sea.

The first disappointment that may be experienced by the marine photographer is the fact that he cannot secure a photograph of the interior of his boat which shows all he wants to see. This is particularly noticeable in the case of small boats of forty feet and less. Naturally the cabins are small, often cramped, leaving little or no room to set the camera upon a tripod or similar firm support. The larger cameras are particularly inconvenient in this respect. Even if there is sufficient space for the photographer

and his camera, he cannot always include everything in the scene he would like to show in the finished picture. This is due to the fact that the average lens has an angle of view too narrow. What is needed is a so-called wide-angle lens, one which covers a greater area on the film without moving the camera back too far. Unfortunately the majority of cameras are equipped with but one lens which is permanently fixed in the camera. A few, however, are equipped with interchange-of-lens features, by means of which various lenses may be attached to the camera at will. The Leica camera is an example of such a miniature camera. This camera may be equipped with speed, telephoto, and wide-angle lenses besides the normal lens at will, by merely removing one lens and inserting the other.

In the case of cabin interiors, the difficulty is easily solved by simply attaching the wide-angle lens to the camera. An angle of view of 65 degrees is thereby produced with the Elmar 35 mm. f:3.5 lens attached to the Leica camera. The normal lens of 50 mm. focus covers only an angle of view of 48 degrees. It will be noted that a considerably greater area can be covered by the wide-angle lens in limited space—an important factor when making photographs of ship interiors.

With the small cameras, tripods can be dispensed with, thus saving a great deal of space which can be used to better advantage. Because the miniature camera is so small, it can be placed in out-of-the-way corners and set at various angles in order to secure just the right effect. This is impossible with the larger conventional type of camera.

The next matter of importance is one of exposures. The interiors of cabins are often illuminated poorly, that is, for photographic purposes, especially in corners where little or no sunlight penetrates. In making pleasing pictures, the cabin should be amply and evenly illuminated. In order to do this, artificial light will usually be required, and this often stumps the beginner in photography, yet the solution is quite easy. Special flash-bulbs are available which can be ignited either by electric current from regular current, a battery, or small flash-light cell batteries. The marine photographer is advised to obtain the type in which the handle consists of a holder for two or three flash-light cells and terminates in a metal reflector and



Interior shots of cabins demand a wide-angle lens.
Photo courtesy Matthews Company.

lamp socket into which the lamp fits. Such an arrangement may be purchased for a dollar or less, and makes an ideal illuminating unit. There is no smoke, flame, or danger as is the case with regular flash-powder which was commonly used in the days before the invention of the flash-bulb. Obviously the bulb is good for but one flash, after which it is discarded. They are so cheap, however, that they do not comprise an expense. Because of their inde-

glass, colored, which is attached in front of the camera lens. Its purpose is to hold back certain light rays, depending upon the color of the filter. By means of a filter, the sky and the water can be made to reproduce on the photograph in their natural intensities and values as seen by the eye. A yellow filter of medium density is the most practical of all filters, for it can be used for practically every condition, although there are over several hundred



A yellow filter produces rich tones and permits separating the sometimes delicate shadings between water and sky.
Photo courtesy Matthews Company.

pendence of the usual house current, they ought to appeal strongly to the boat photographer.

We have taken care of two of the most vexing problems in photographing ship interiors. Now let us investigate a few other forms of photography which appeal to the yachtsman. Take races, for example. Ordinarily the spectators must keep their boats a considerable distance from the race course, and if photographs are wanted of the participants, the photographer has to be satisfied with tiny specks on the picture—specks which are hardly recognizable as a general thing, due to the distance between the camera and the objects of the picture being photographed.

In cases such as this, we resort to another type of lens which is just the reverse of the wide-angle lens—the telephoto lens. The telephoto lens has a longer focal length, and is therefore to be compared with binoculars in that it magnifies the object and produces it larger on the film in the camera. The Elmar 135 mm. f:4.5 lens as offered for use on the Leica camera is ideal for distant photography. It has an angle of view of only 19 degrees and from this it can be seen that it will “pull” in distant objects and present them on the film of a size which is quite large enough for all ordinary purposes. It is with the aid of such lenses that such startling pictures are often produced, pictures in which it seems that the photographer was very close to the object. In reality he was a considerable distance away. A lens of this nature is as important to the marine photographer as the wide-angle lens. Just think of binoculars and their characteristics, and you will get the idea of the telephoto lens on a camera.

It might be said that at least seventy percent of the amateur marine photographs of a scenic nature are flat, dull, and uninteresting. This is due mainly to the fact that the amateur photographer does not use a filter. The water and the sky, while of different colors as a rule, are recorded on the film as practically the same shade, resulting in the flatness so often noticeable. A filter is a disc of

different kinds of filters available. The amateur should by all means secure a yellow filter and *use it* whenever clouds in the sky are to be recorded. The filter will hold back the excessive blue of the sky and permit the clouds to register on the film.

A sun-shade is another important accessory that should be used, for, especially on the water, an abundance of light is reflected by the water into the lens. This tends to create a veil or fog on the picture. The sun-shade protects the camera lens from these unwanted light rays and permits only the picture-forming rays to enter the lens.

Commercial finishing laboratories which develop and print amateur films agree that ninety percent of all photographic failures are due to under-exposure. On the water a similar percent produce over-exposure because they do not take into consideration the additional light which exists on the water, due to reflection. The problems of exposure at best are confusing to the amateur. Even the most experienced photographer experiences difficulty in this matter, for it must be remembered that the light which is used to form the photographic image, in other words, photographic light, is not entirely the same as the light by means of which we see, or visual light. How can anyone, therefore, claim to be able to judge photographic light without the aid of some instrument? Before the amateur becomes alarmed at this news, let me hasten to explain that there are on the market a number of excellent devices which measure accurately the actinic value of the light, artificial or sun. Of the most accurate and least bothersome might be mentioned the famous Weston Photronic cell meter, which employs a special type of photo-electric cell developed by the Weston Electrical Instrument Company. In use, the meter is held or aimed in the direction of the object to be photographed. A needle swings across a scale upon which is calibrated the lens and shutter settings of the camera. Instantly the photographer knows

(Turn to Page 31)

The Camera Is the Fulcrum
Upon Which Turns the En-
tire Structure of the Motion
Picture Industry.

THE CAMERA

Vol. I.

WHO THEY ARE

MONTHLY NEWS OF PRODUCTION

BENNETT TOURS WORLD

Paul Perry, but recently home from shooting pictures in Ceylon, Java and the Straits Settlements, and Robert Miller at home after several cruises to the Orient, as chief photographer of the Dollar Lines, departed Wednesday, December 28, with Chester Bennett for a world tour to last, according to the breaks of the game, a year or two.

The expedition is an enterprise of Mr. Bennett and Mr. Pat Powers, together again after several years, and our cameramen were chosen not only because of their knowledge of photography but of their invaluable experience in actual production at far flung points in the Orient.

Mr. Perry goes as chief cinematographer and Mr. Miller as his trusty lieutenant—together they will handle the entire photographic department and as they are personal friends of long standing they are happy about the arrangement.

Unless their plans be altered the production program will contemplate the filming of twelve short subjects in color with locales in Japan, China, Indo-China, the Philippines, Java, Burma, Ceylon, Borneo, Siam and Mediterranean countries, all of which will be released through one of the major studios in Hollywood. Bennett Process color will be used.

Backgrounds for several studios will be shot in many countries and three features will be produced in black and white using Bennett Process Film. The color will be shot with Dupont Super-Pan.

The direction will be in the capable hands of Ward Wing whose latest picture, "Samarang," was released by United Artists, and Miss Lori Bara, author of "Samarang," will accompany the expedition as writer of the scripts. She is a sister of Theda Bara.

One feature will be written by Miss Nell Emerald, whose play "This Week of Grace," starring Gracie Fields, is just now enjoying a successful run in London.

Japan will be the first stop of the expedition, thence to Saigon and thence to Singapore where headquarters will be established and the laboratory built under personal supervision of Mr. Bennett.

A full and complete outfit of photographic, color and sound equipment was taken along, among the items being a Bell & Howell standard camera; Leicas and other miniature cameras; the new Fearless Camera and motor and the latest obtainable in sound.

Mesdames Perry and Miller plan to join their globe-trotting husbands at Singapore in about six months.

Rolla Flora has established his research laboratory and machine shop at 1128 North La Brea, Hollywood. He has just completed the special process shots and main title in "Cane Fire," photographed by Alvin Wyckoff.

George Meehan is happy with his billet at Alexander Brothers' Studio where he is shooting on his fourth picture for Al Alt and Sam Catsman, Screen Craft Production. The current feature is "The Moth," Fred Seymour directing. Sally O'Neil and Paul Page are featured.

Commodore Roy Klaffki is tuning up his air boat for a flight to some mysterious destination. Is it possible that he has located a Glory Hole somewhere up in the gold fields?

J. O. Taylor, wizard of the famous Grandeur wide film, tells the editor that some day the now somewhat eclipsed 70 mm. will be back again with the imperfections all ironed out. That's something to look forward to.

Len Powers, ex-knight of the padded gloves, is back on his old shooting grounds at U.

William Steiner has just finished an untitled feature in the cast for Educational.

Edward Du Par and Roy Fister have completed for Educational, in the east, "Corn on the Cop" and "Let's Play Post Office."

M. A. Anderson, for Chesterfield, photographed "The Campanile Murder Case."

Harry Forhes photographed "Love After Thirty" for Freuler Film Associates.

METRO-GOLDWYN-MAYER

Ray June got his usual laudatory reviews on "Rip Tide."

Lester White has another fine opus to his credit in "Laughing Boy."

Oliver Marsh, M.G.M. pioneer, is busy as usual. His last feature was "Mystery of the Dead Police."

Phil Rossen will be able to tell us all about it now. He has increased his repertoire with "It Happened One Day."

Old Reliable Len Smith has just put over a real one in "Old Hannibal." This picture was just up Leonard's alley, so to speak.

Jimmy Howe, director of photography on "Viva Villa" made a real picture of his big subject. The Mexicans liked the clever young man from the Orient and extended him many courtesies.

Clyde De Vinna and Charles Clarke, the latter famous for his courage in saving himself and a comrade when they were lost up under the Arctic Circle, are doing some notable cinematographing in "Tarzan and His Mate."

COLUMBIA

Bennie Kline had the assignment on "The Ninth Guest" at Columbia.

Joe August, brother of the famous Edwin August, photographed "No Greater Glory" for Columbia.

WARNER-FIRST NATIONAL

Byron Haskins, with "As the Earth Turns"; Sid Hickox, with "Wonder Bar"; George Carnes, "Gambling Lady"; Ernie Haller, "Journal of Crime"; Ira Morgan, "The Heir Chaser"; W. Rees, "A Modern Hero"; Arthur Todd, "Hard-Old Teen," kept the home fires burning at Warner-First National until early in December. Now they are all on other and equally notable assignments.

Tony Gaudio's fine Italian hand is seen in the camera work on "Upperworld." Roydel Ruth directed and Warren William, Mary Astor, Ginger Rogers and others furnished the drama.

Ira Morgan's current opus, is "A Very Honorable Guy" with Joe Brown as the laugh-smith. Lloyd Bacon directed. It is one of Ira's many good ones.

Alaskan atmosphere will serve as the locale for the next Ben Blue comedy to be directed by Ralph Stauh at the Warner's Vitaphone Studios in Brooklyn. Having spent time in Alaska where he endured some very heavy winters, Stauh will be right at home making the exteriors, which will be made outside during the present snowstorm in New York.

Joe Walker was in charge of the photography on "Night Bus" and, as usual, turned out a fine job.

Johnny Stumar has finished shooting "Murder at Rexford Arms."

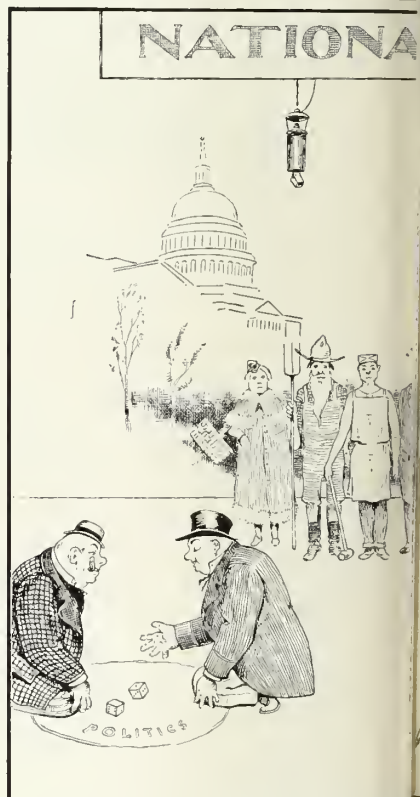
A card from Lloyd Knechtel, London, tells the Santa Claus editor that he is feeling very much at home there and extends his sincere compliments of the season to all his friends in Hollywood.

John Mescal, champion golfer of the cameraman classification of the world, directed the photography on Universal's picture, "The Poor Rich." Some of these days this Mescal boy is going to step out and grab the National Amateur Championship. Edward Sedgewick directed the action.

Gill Warrenton was chief cinematographer on Monogram's "Beggars in Ermine."

BOYLE AND FERNSTROM

John W. Boyle is making great strides with his feature "Sweden, Land of the Vikings" back East. The press of New England gave this production in color unusually fine notices. This is an outstanding seven reel world travel production done in novel style in photography, story and narrative. The Boston Transcript even went so far as to say: "Through nearly an hour and a half. Sweden, Land Of The Vikings proves a suggestive hint to the 'New Deal' in addition to pleasurable entertainment." Nutsed. Good luck and much of it John. This is the film that John and Mrs. Boyle produced with the assistance of Ray Fernstrom, dat ob dabil Swede.



THE BIG DIRECTOR

EDITOR

(CONTINUED)

of work and wages and then, suddenly and many of the loyal, long suffering to pursue, found themselves once more

As a result of this astonishing division in the ranks of the Camera well on to six years has been the story

But in such times as these it is the builders has become the head of honest opinion, have a way of looking

Let not, therefore, the ill wish work has for the time being been the elements of discord shall be re-Union are enthroned together is the

Yea, the Producer is rapidly his are best conserved by friendly co his property, his business and his far away—and which has never at to the mutual well being of both to the glory of the motion picture

CRAGRAM

The Camera Operative
Body Is the Power Behind
Production in All Motion
Picture Activity.

FROM THE CAMERAMAN'S ANGLE

WHAT THEY DO

No. 1

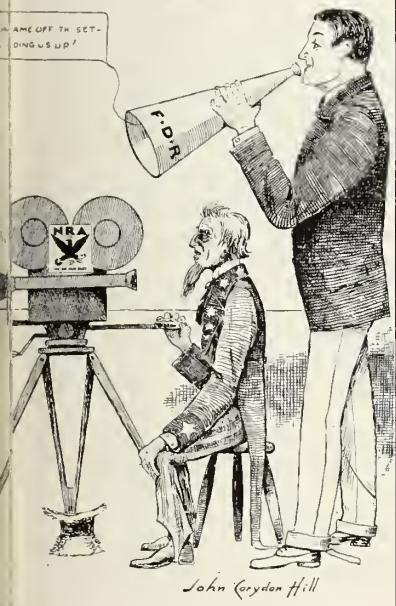
IN A. D. 2034

Walt Disney's
"Three
Little
Pigs"

THE PERPETUAL ATTRACTION
To-Night

STAGE

SUPER-PRODUCTION
PROSPERITY
COMES BACK



NEW DEAL TELLS 'EM

TRIAL

(PAGE 1)

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old."

Cheramen rejoice because their great
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th studio and on location—near and
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the Cameramen, on EQUAL terms, and
of both.

A PRODUCTION MIRACLE

Three hundred men working in three eight-hour shifts a day for ten days were required to build the set for "By a Waterfall" sequence which was the big feature of Warner Brothers' "Footlight Parade."

Thirty tons of steel, brass and tin were necessary to fabricate the big revolving fountain.

Seventy-two hundred pounds of paw-paw fed blondes were required to decorate the amazing mechanism designed and created by Busby Berkeley and by Frank Murphy, the electrical genius of the Warner picture factory.

George Barnes photographed dramatic sequences of the big picture and to Sol Polito fell the difficult task of filming the water sequences—and it was one of the finest pieces of camera work in the history of the cinema.

Assisting Mr. Polito were: Mike Joyce, operative cameraman; Louis De Angelis, assistant; George Whittemore, electrician; George Amy, film editor; Billy Cannon, assistant film editor; Ollie Garrett, sound engineer; Harold Noys, grips; Gene Delaney, props; Irva Ross, script.

As seen on the screen this big water set is a spec-

PARAMOUNT

Bert Glennon was the lucky cinematographer to photograph "Catherine the Great." He likes the big ones and is sure fire where majesty is concerned. The picture promises to be worthy of its subject.

Leo Tover was assigned to "Bolero" by Chief Cinematographer Virgil Miller; Henry Sharp shot "Three of a Kind"; Theodor Sparkuhl photographed "No More Women," while "Good Dame" fell to the camera of Leon Shamroy.

Bert Glennon and Henry Sharp are sharing the honors for the extraordinarily fine photographic job they did in "Alice in Wonderland." Farciot Edouart and his able associates, Dev and Gordon Jennings, did a wonderful job of work with the special effects.

Archie Stout has just put the finishing touches upon Paramount's big Western, "The Last Round Up," which the Hollywood Reporter estimates as a "rattling good Western." The author is Zane Grey and the director Henry Holloway. Mr. Stout is an ace at all cinematographic drama, but at the delineation of big Western stuff he is almost in a class by himself.

FOX

Hal Mohr directed the photography on the great Fox production, "Carolina."

Ernest Palmer will pull down the screen credit on "Ever Since Eve," the new Fox feature.

John Seitz has been exercising his rare cinematographic genius on "Coming Out Party," a Fox offering.

Barney McGill and George Schneiderman have completed their camera assignment on "Disillusion" and "Woman and the Law," respectively.

Hal Mohr had a wonderful time shooting "David Harum," the big all star feature with Will Rogers as the beloved old boss trader, James Cruze directed.

Lee Garmes and George Schneiderman shared the honors of the photographic work on "George White's Scandals." Rudy Vallee is the star. Producer George White.

Ernest Palmer with Winfield Sheehan as producer, did the cinematographic stuff on "Fox Follies," the story idea of Will Rogers and Philip Klein. The rail-birds say it's good.

Lee Garmes did the cinematographic work on "I Am Suzanne," Jesse L. Lasky's most recent production. E. E. Ward handled the sound. The featured players are Lilian Harvey and Gene Raymond. The Mussolini sponsored Piccoli Marionettes, Italy's greatest theatrical troupe, nearly two hundred years old, are shown in the early sequences of this picture and they make a great hit. Mr. Garmes, as usual, lives up to his fine reputation as a virtuoso of the motion camera.

tacular disappearing fountain on which sixty glorious blonde girls disport themselves on four alternately rotating platforms, all bathed in a colored mist from three hundred tiny water sprays.

But to those who watched the building of this amazing mechanism, who know the problems which confronted artists and engineers when Busby Berkeley first sketched his ideas roughly on a conference room tablecloth, and who remember the short time allowed for its completion, it will always be remembered as a confirmation of the belief that: "Studio technicians can do anything."

To begin with, the fountain which is only one feature of an enormous set for the celebrated "water number" created by Berkeley for the Warner Brothers picture, "Footlight Parade," is twenty feet in diameter at its base, twenty-two feet high in the center and under its frothy super-structure more than thirty tons of steel are hidden.

Three tons of girls ride these revolving spraying turrets, but their weight is negligible compared to the complex machinery which rides camouflaged within the super-structure. Each whirling platform carries its own propelling motor, its own pump and a huge water storage tank to supply its own share of the sprays on the fountain.

Each of the four platforms fits exactly within the inner limits of its larger neighbor. They can turn separately, all on one level, all in any one direction, or alternately and on levels four feet apart.

A tremendous steel platen, such as supports hydraulic elevators in office buildings, and another power motor near the foot of the shaft, can lift the entire assembly on structural steel, spraying water and propelling motors, not to mention the three tons of girls, twenty-two feet high in the air, at any given speed and can also lower them completely out of sight. It can lift all this as a unit or in four alternate whirling layers.

There were no patterns to follow when Berkeley talked first about his idea of a "disappearing fountain." His ideas were sketchy, his mechanical knowledge limited.

"Can we do it," he demanded.

Louis Geib, technical director for Warner Brothers, and Frank N. Murphy, head of the studio's electrical and mechanical department, thought they could. They had ten days to plan it, fabricate and install it. They submitted first drawings to an outside contractor. The studio was busy with other sets for other pictures and was willing to have the set built off the lot.

The contractor, however, wanted three months to do the job. Murphy and Geib had promised it within ten days. Wearily they moved cots into their offices, telephoned their families not to expect to see them for ten days and set about keeping their promise.

The mills, the plaster shop, the steel workers and the tinsmiths were all trebled in numbers and put on three eight-hour shifts. The studio foundry blazed day and night. Even the flanged brass wheels on which the giant platforms rotate, were made in the studio under Murphy's orders.

The largest steel circle, when it was completed, weighed more than six tons. At exactly one angle it would go through one of the gigantic stage doors. A motor mounted crane brought it to the stage and maneuvered it through the opening and into place near the great hole cut in the stage floor, under which workmen had dug a pit nearly thirty feet deep.

Quicksand there impeded the work. Finally the whole excavation was concreted off, pumps were installed to drain seeping water and the huge mechanism was lowered into place.

Structural steel workers joined studio forces and worked twenty-four hours a day for three days, riveting and welding the basic structure into permanence.

Berkeley, not a little amazed at the vast amount of work his original idea was causing, went to the edge of the hole occasionally and peeked over. Accustomed as he was to having his most outlandish conceptions translated by studio technicians into steel and plaster, he nevertheless seemed perpetually astonished that his idea was actually feasible.

Convinced finally that it was, that thirty tons of steel, eleven powerful motors and pumps, pulsing dynamos and huge water mains would give him the effects he had sketched so roughly on the tablecloth, he washed his hands of all technical problems and busied himself with the three tons of girls who were to ride the contraption.

Lloyd Bacon directed the picture from the screenplay by Manual Seff and James Seymour while Berkeley created and staged the choruses and dance ensembles.

MINIATURE CAMERA PHOTOGRAPHY

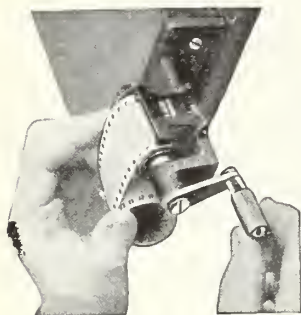
(Continued from Page 7)

using them constantly he will arrive at a point where he is fully acquainted with their various characteristics, such as latitude of exposure, time of development in a definite formula to obtain the finest grain, etc. There will now be at his disposal a tool with which he is well acquainted, and which he can mould to produce the results desired.

Many photographers disregarding this fact continue to jump from one film to another with the conclusion that they have no definite idea of the results they are going to get. Try all the films—then decide on one or two which would serve you best, and stick to them. When a new film is placed on the market experiment with one or two rolls. If it will serve you more adequately than the emulsions you are employing, discard one of them in its favor. If it is just another film as far as you are concerned, then forget it.

There are also many photographers who flock to the supersensitive emulsions, as the sole sensitive material which they employ. Let a faster emulsion be introduced, and they will immediately discard the film they are employing in its favor. Designations such as merely orthochromatic, or panchromatic, do not seem to have color to them. When a film is given a definite trade name and is designated as belonging to the supersensitive class, they immediately use it solely and expect it to produce their long desired masterpieces.

Supersensitive emulsions stand as criterions to the progress in photography, but they have their specific uses. In general, the slower the film, the finer is its grain. Why is it necessary to employ a supersensitive emulsion in broad daylight, when an orthochromatic film will have all the speed that is necessary, and in addition will produce a finer grain? When photographing with artificial light it would be wisest to employ one of the supersensitive type



The Leica Film Winder for quick and efficient loading of standard 35 mm. motion picture film on Leica spools when film is purchased in bulk.

films. In this case resorting to a slower orthochromatic film, will not be taking advantage of the marvelous progress in the sensitizing of emulsions. Then again very soft daylight scenes may be required. In this instance a supersensitive emulsion may be prescribed, due to the soft results it produces. Bear in mind however that for the general run of outdoor "shots", slower orthochromatic and panchromatic films will produce the picture with a finer grain.

* * *

The Vertex Miniature Enlarger. As new products appear on the market they will be described in this department. At times, apparatus which may have been introduced some time ago, but of whose existence the miniature camera worker may not be aware, will be considered. I am including an illustration of the Vertex Miniature Enlarger, which is sponsored by Willoughbys. This enlarger



The Vertex Miniature Enlarger.

is made entirely of metal, and is supplied with a base-board for 8 x 10 or larger. It contains a fully corrected f:6.3 lens, rough and critical focusing, swinging red glass screen to allow the paper to be adjusted while the negative image is being projected on it, film support wings, and other features. It will accommodate negatives 2.4 x 3.5 cm., 3 x 4 cm. and 4 x 4 cm. In short it will serve ideally for the photographer possessing a few cameras with different negative sizes.

(To Be Continued in February)

SCHEIBE'S LATEST FILTERS



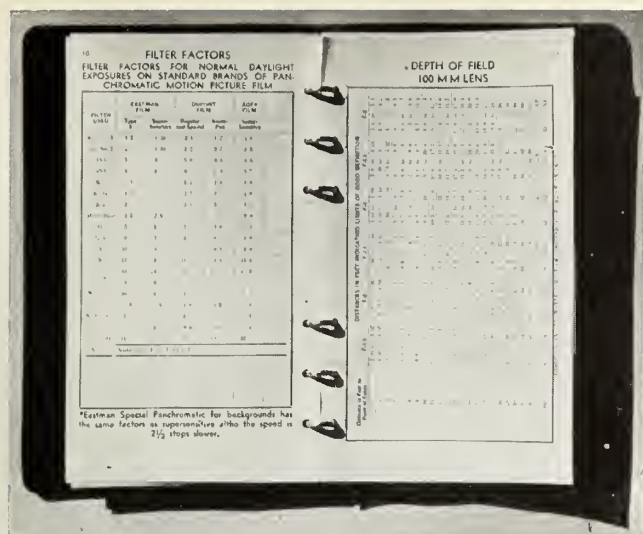
Graduated diffusing screens in varying degrees of diffusion are proving successful in their operation on dolly shots and, too, for stationary shots. One of the screens is made to slide through the matt-box, starting without diffusion or a very mild degree and increasing to the desired effect for a close-up.

Screens 2x4 are made to fit the new Mitchell adaptor, two screens being necessary for this device, as they slide across each other from one end of the carrier to the other—diffusion coming in from each side and crossing over the center of the aperture.

Graduated Color Filters and Graded Fog Filters are used in same manner, whether for dolly or stationary shots.

Another new filter known as Scheibe's Hot Spot Iris has also proved successful in its use. This Iris is 6x6 inches square with color in the center and gradually blending outward to the edge of the glass minus color. The colored portion is about three inches in diameter and is used in front of the process projector at varying distances to cover the hotspot on the process screen, thereby producing an even density of image in the final shot. No more burned-up centers on the background.

The new Monotone Filter, for Superpan, is becoming very popular with cameramen who use it mainly for lighting purposes. It can be used in any kind of light and shows true black and white values, thereby saving time and material for tests. This filter is now made to fit into the focusing tube on a Mitchell camera and the boys say it works fine.



This is the tenth installment of the Cinematographer's Book of Tables compiled and computed by Mr. Fred Westerberg, one of the technical editors of THE INTERNATIONAL PHOTOGRAPHER.

Cinematographer's

BOOK of TABLES

By FRED WESTERBERG

There are several more installments to come probably concluding with the April issue, 1934, and when completed the tables will constitute a handy reference guide welcome to all cinematographers, professional and amateur.

Take note that the tables are so placed in the magazine as to be easily cut out and bound into a small pocket ring book. Cut down the middle of page 19; then trim top and bottom to fit your cover; punch holes to fit rings on inner and outer edges of magazine pages 19 and 20. When all tables have been bound into your ring book the pages will number from 1 to 52 inclusive with complete index unless others are added, which seems very likely at this mailing.

12-E

TIME CONVERTED TO FEET OF FILM 16 mm. FILM

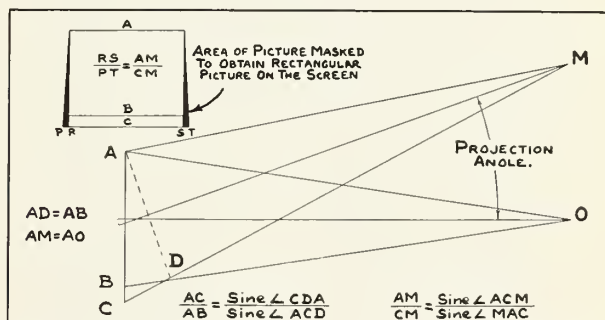
TIME REQUIRED TO EXPOSE VARIOUS LENGTHS OF FILM AT DIFFERENT CAMERA SPEEDS

Feet of Film Exposed	CAMERA SPEED IN PICTURES PER SECOND						
	8	12	16	24	32	48	64
RUNNING TIME IN MINUTES AND SECONDS							
1	0—5	0—3.3	0—2.5	0—1.7	0—1.2	0—.8	0—.6
2	10	6.7	5.0	3.3	2.5	1.7	1.2
3	15	10.0	7.5	5.0	3.8	2.5	1.9
4	20	13.3	10.0	6.7	5.0	3.3	2.5
5	25	16.7	12.5	8.3	6.3	4.2	3.1
6	30	20.0	15.0	10.0	7.5	5.0	3.8
7	35	23.3	17.5	11.7	8.8	5.8	4.4
8	40	26.7	20.0	13.3	10.0	6.7	5.0
9	45	30.0	22.5	15.0	11.2	7.5	5.6
10	50	33.3	25	16.7	12.5	8.3	6.3
12	1—00	40.0	30	20	15.0	10.0	7.5
14	10	46.7	35	23	17.5	11.7	8.8
16	20	53.3	40	27	20.0	13.3	10.0
18	30	1—00	45	30	22.5	15.0	11.3
20	40	07	50	33	25.0	16.7	12.5
22	50	13	55	37	27.5	18.3	13.8
24	2—00	20	1—00	40	30.0	20.0	15.0
26	10	27	05	43	32.5	21.7	16.3
28	20	33	10	47	35.0	23.3	17.5
30	30	40	15	50	37.5	25	18.8
32	40	47	20	53	40	27	20.0
36	3—00	2—00	30	1—00	45	30	22.5
40	20	13	40	07	50	33	25.0
44	40	27	50	13	55	37	27.5
48	4—00	40	2—00	20	1—00	40	30.0
52	20	53	10	27	05	43	32.5
56	40	3—07	20	33	10	47	35.0
60	5—00	20	30	40	15	50	37.5
64	20	33	40	47	20	53	40.0
68	40	47	50	53	25	57	42.5
72	6—00	4—00	3—00	2—00	30	1—00	45.0
76	20	13	10	07	35	03	47.5
80	40	27	20	13	40	07	50.0
84	7—00	40	30	20	45	10	52.5
88	20	53	40	27	50	13	55.0
92	40	5—07	50	33	55	17	57.5
96	8—00	20	4—00	40	2—00	20	1—00.0
100	20	33	10	47	05	23	02.5

26-B

PROJECTION 35 mm. FILM

EFFECT OF PROJECTION ANGLE ON SCREEN PROPORTION AND ON THE RECTANGULAR SHAPE OF THE PICTURE



EFFECT OF PROJECTION ANGLE ON SCREEN PROPORTION

Focal Length of Proj. Lens in Inches	RELATIVE HEIGHT OF PICTURE FOR VARIOUS PROJECTION ANGLES. $\frac{AC}{AB}$ (see diagram).					
	5°	10°	15°	20°	25°	30°
3	1.0126	1.033	1.063	1.104	1.157	1.225
3½	1.0113	1.031	1.059	1.097	1.149	1.214
4	1.0104	1.029	1.056	1.093	1.143	1.207
4½	1.0096	1.027	1.054	1.088	1.138	1.201
5	1.0091	1.026	1.051	1.086	1.135	1.196
6	1.0082	1.024	1.048	1.084	1.130	1.189

EFFECT OF PROJECTION ANGLE ON RECTANGULAR SHAPE

Focal Length of Proj. Lens in Inches	RATIO OF TOP TO BOTTOM PICTURE WIDTH FOR VARIOUS PROJECTION ANGLES. $\frac{RS}{PT}$ (see diagram).					
	5°	10°	15°	20°	25°	30°
3	.9827	.966	.948	.931	.911	.891
3½	.9851	.970	.956	.939	.923	.906
4	.9869	.974	.961	.947	.932	.917
4½	.9884	.976	.966	.953	.939	.926
5	.9894	.979	.968	.957	.945	.933
6	.9913	.982	.975	.964	.954	.944

Based on Standard Projection Aperture .600 by .825 of an inch.

THE SALISBURY RIOTS

By JOHN BEECROFT

HARRY TUGANDER can come through revolutions dodging successfully machine gun bullets. He can even get away with President's "Pal," as he did President Grau San Martin when he was down with Hugo Johnson covering the last Cuban revolt. He can shoot communist mobs in Union Square and at miners' strikes and not get clubbed—but let him cross the Mason and Dixon Line into the sunny South and he gets into trouble.

On one Southern trip, a few years ago, he had been covering football practice at the Naval Academy, when, on his way back, the car he was riding in overturned and Tugander was thrown into a ditch. He was badly injured and spent several weeks in a hospital at Washington. President Hoover was distressed when he was informed of Tugander's accident and sent him flowers with the sincere hope of seeing him and his camera back on the firing line soon. Harry remembers that accident for Hoover's solicitude and for the many kindnesses shown him by other Washington officials.

His most recent escapade in the South almost ended in his being strung up on a lamp post. Tugander was

pleasantly and happily covering the President, Congressmen and Senators and events at Washington when the New York office got word there was trouble down in Salisbury, Maryland. The authorities in Salisbury had arrested four men who were accused of leading a lynching there. Mobs of men had poured into the town from the surrounding country and were trying to take the



Hoisting Harry Tugander's sound truck from the river where a mob had thrown it.

26-A

PROJECTION
35 mm. FILM

12-F

TIME CONVERTED TO FEET OF FILM
35 mm. FILM

EFFECT OF VARIOUS MAGNIFICATIONS ON THE
BRIGHTNESS OF THE PROJECTED PICTURE

RUNNING TIME IN MINUTES AND SECONDS
CONVERTED INTO FEET OF FILM EXPOSED

Size of Picture On Screen In Feet	Screen Magnification In Diameters	Relative Brightness of Screen Image at Various Magnifications Light Constant	Relative Light Required at Various Magnifications for Constant Screen Brightness
Horizontal Projection			
2.91 by 4	58.2	1180	8.5
3.64 by 5	72.7	760	13.2
4.36 by 6	87.2	530	19
5.09 by 7	101.8	385	26
5.82 by 8	116.4	295	34
6.55 by 9	130.9	233	43
7.27 by 10	145.4	189	53
8.00 by 11	159.9	156	64
8.73 by 12	174.5	132	76
9.45 by 13	189.1	112	89
10.18 by 14	203.6	96	104
10.90 by 15	218.1	84	119
11.64 by 16	232.7	74	136
12.36 by 17	247.3	65	155
13.09 by 18	261.8	58	172
13.82 by 19	276.4	52	192
14.55 by 20	290.9	47	213
16.00 by 22	320.0	39	257
17.46 by 24	349.1	33	304
18.91 by 26	378.2	28	358
20.36 by 28	407.3	24	417
21.82 by 30	436.4	21	478
23.27 by 32	465.4	18.4	545
24.73 by 34	494.5	16.3	613
26.18 by 36	523.6	14.6	688
27.64 by 38	552.7	13.1	765
29.09 by 40	581.8	11.8	850

Based on Standard Projection Aperture .600 by .825 of an inch.

Seconds	FEET OF FILM EXPOSED										
	0 Min.	1 Min.	2 Min.	3 Min.	4 Min.	5 Min.	6 Min.	7 Min.	8 Min.	9 Min.	10 Min.
0	0	90	180	270	360	450	540	630	720	810	900
2	3	93	183	273	363	453	543	633	723	813	903
4	6	96	186	276	366	456	546	636	726	816	906
6	9	99	189	279	369	459	549	639	729	819	909
8	12	102	192	282	372	462	552	642	732	822	912
10	15	105	195	285	375	465	555	645	735	825	915
12	18	108	198	288	378	468	558	648	738	828	918
14	21	111	201	291	381	471	561	651	741	831	921
16	24	114	204	294	384	474	564	654	744	834	924
18	27	117	207	297	387	477	567	657	747	837	927
20	30	120	210	300	390	480	570	660	750	840	930
22	33	123	213	303	393	483	573	663	753	843	933
24	36	126	216	306	396	486	576	666	756	846	936
26	39	129	219	309	399	489	579	669	759	849	939
28	42	132	222	312	402	492	582	672	762	852	942
30	45	135	225	315	405	495	585	675	765	855	945
32	48	138	228	318	408	498	588	678	768	858	948
34	51	141	231	321	411	501	591	681	771	861	951
36	54	144	234	324	414	504	594	684	774	864	954
38	57	147	237	327	417	507	597	687	777	867	957
40	60	150	240	330	420	510	600	690	780	870	960
42	63	153	243	333	423	513	603	693	783	873	963
44	66	156	246	336	426	516	606	696	786	876	966
46	69	159	249	339	429	519	609	699	789	879	969
48	72	162	252	342	432	522	612	702	792	882	972
50	75	165	255	345	435	525	615	705	795	885	975
52	78	168	258	348	438	528	618	708	798	888	978
54	81	171	261	351	441	531	621	711	801	891	981
56	84	174	264	354	444	534	624	714	804	894	984
58	87	177	267	357	447	537	627	717	807	897	987

Based on standard talking picture speed of 90 feet per minute.

prisoners away from the police. The governor had ordered out the militia and it looked as if things would be pretty interesting in that county. Tugander's boss wanted to cover Salisbury and ordered Tugander from Washington to Salisbury—"Get the mob scenes. Get plenty of action in the story. Riots and everything you can get."

Tugander got more than he bargained for on that job. He got the riots, all right—and plenty of action, too. Here is what Tugander said about that assignment:

"We followed Route 404 and United States Route 13 from the Mattaspeake ferry to Salisbury. As we were nearing Salisbury we saw eight busses of troops rushing out of the town towards Baltimore. Behind the troops we saw a photographer we knew. As he passed in his car he waved his hand, but we didn't know whether he was trying to stop us or was just saying hello. Behind him was a sedan filled with four tough looking men that seemed to be escorting him out of town.

"We didn't quite know what to make of it, but continued on towards Salisbury. We had no sooner arrived in the town than we saw a mob chasing someone down a street. We started to follow the mob when a Western Union messenger jumped on the running board on one side of the truck. 'Get that truck out of sight—your lives aren't worth a nickle!' he yelled. The messenger was still shouting at us when a reporter for a local paper jumped on the other running board and said:

"The mob is after reporters and photographers. Get out while you can get out."

"We turned the truck into a side street and about half way up the block we found a garage. We put the truck away in the back where it couldn't be seen easily.

"Then I walked back to the corner. I could see the mob smashing up a car down the street. It belonged to one of the reporters. I asked a man standing beside me why the mob was after the reporters. He didn't answer; just looked at me. Another man gave me a once over and said that I looked like one of those damned picture men and hanging was too good for me. The police were standing around watching the mob and never making any attempt to stop them.

"While I was standing on the corner a red-haired boy came tearing down the street leading a mob. They were headed for the garage in which the truck was parked. There was no stopping them. It would have meant fighting the whole town. In a minute they had the truck and were pushing it down the street. They came to a cross street where there was a red traffic light. The policeman turned on a green light so they could keep on going. They kept shouting that they wanted the men who belonged to the truck. As the mob went down the street they passed the chief of police and another local police offices. Neither made any effort to stop the mob. I followed them. When they got to the west side of the Wicomico River, they pushed the truck over an embankment head on. It went into the river out of sight. \$25,000 worth of equipment—gone!

"Some shouted they were going after the newsreel men now. So I beat it to the sheriff's office. From there I phoned the office to tell them what had happened. The sheriff said he couldn't or wouldn't guarantee protection as the mob was uncontrollable and advised since the militia had left to get out. I got a car from one of the town officials and went to Easton, while the mob was storming the hotel for the reporters and photographer who had been driven in there."

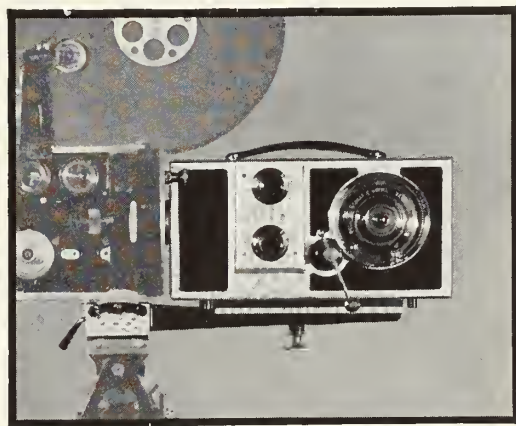
Tugander came back to Salisbury the next day to
(Turn to Page 28)

The B & H Cooke VARO LENS

The 1934 releases announced by leading producers promise a year rich in dramatic and musical entertainment. And in no small part will these accomplishments depend on the B & H Cooke Varo lens for photographic effects. This "zoom" lens is alone in its speed, quality of definition, and ease of use. At F 3.5 the range is from 40 mm. to 50 mm.; at F 4.5 from 40 mm. to 85 mm., and at F 5.6 and F 8 the full "zoom," from 40 mm. to 120 mm., is obtainable. Adjustable stops provide for limiting the "zoom" as desired. One crank controls all moving parts. The iris is varied automatically with the focal length to keep the f/ value constant. Close focusing is done with auxiliary lenses. Write for full details. Sometimes available on rental to responsible studios in this country.

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1849 Larchmont Ave., Chicago; 11 West 42nd St., New York; 716 North La Brea Ave., Hollywood; 320 Regent St., London (B & H Co., Ltd.). Established 1907.



B & H Cooke Varo Lens in photographing position on the Bell & Howell Camera.

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B & H Cooke F 2 Speed Pancro Lenses, designed to focus the blue and red rather than the blue and yellow rays, are very nearly apochromatic. Their efficiency and success has caused their almost universal adoption in leading studios. Made in eleven focal lengths, from 24 to 108 mm.

B & H Cooke F 2.5 Pancro Lenses offer the same remarkable correction. At considerably lower prices they meet many needs where their speed is adequate. Seven focal lengths from 35 to 162 mm. Write for details and prices.

ORIGIN OF THE POINT SOURCE THEORY OF LIGHT INTENSITY

By F. MORRIS STEADMAN

KEPLER, more than 300 years ago, when he arranged his study plan for the schools, knew full well that things were made visible by the play of light from whole primary and secondary light sources and expanses, as from the sun, the sky, and from the surfaces of lighted objects about us. He knew that whole window openings illuminated rooms and that, at night, things were made visible by the functioning of whole flames.

There was no need that he should have ignored these natural light conditions, as will be shown, and the fact that he did so in his teaching plan, is a mystery that needs explaining.

The present practically total popular ignorance of light is seen in the almost universal practice of "snap shooting" amongst amateur photographers and the custom of "guessing" the exposure amongst professionals.

Dr. Woodhull, of Columbia University, and many other educators, have revealed to me their dissatisfaction with the Point Source theory of light instruction because of its failure as explained above.

We are to be privileged soon, I believe, to see this study of the technical point source dropped from the school books and the study of natural light sources substituted. This series of articles is to hasten somewhat this reform.

Two different patterns of light play will now be described: The light from the whole hemisphere of sky converges upon each accessible grain of dust on the earth, but on a dark night a light source placed on the earth would spread its light outward through this same hemisphere of directions. One pattern is just as true to nature as the other. This is a matter of illumination patterns, not of intensity.

For some unnecessary reason the scientists have visualized only the pattern of illumination which spreads from small sources.

This is the unfortunate and even disastrous limitation from which Flammarion and Count Rumford freed themselves, as will be explained further on.

We will now see how Kepler was trapped into ignoring the whole flame and using a technical point source instead.

Imagine him at work with a small flame in a room. Half way to some opposite wall he suspends an opaque card, say a foot square. He sees a shadow on the wall that is approximately two feet square and which has about four square feet in it, or four times the area of the card.

But he notes that this shadow measurement is not precise, because of a blend, which we call the penumbra, all around its edges. This blend on the sides of the shadow is equal in width to the width of the flame and at the top and bottom of the shadow it is equal to the height of the flame. Exactness must be secured. He lets the light shine through a small hole, say a fourth of an inch in diameter, the card with this hole being held against the flame. The penumbra is now reduced to the quarter inch blend. It is clear that to make this shadow perfectly sharp at the edges and make the shadow just four times the area of the card, the source must be reduced to a technical point.

We find then, that in order to reduce to an accurate geometrical design the truth that light at double distance

spreads over four times the area that it does at distance one *and do it in the single pattern of spreading light to which he was restricted*, he had to visualize the light as spreading from a technical point, thus making it necessary to ignore the very cause of the brightness—the whole flame. Will the reader please try to visualize the situation in which the wise Kepler, in explaining an effect, *annihilated the cause thereof*?

The present popular ignorance of light, after using the above erroneous scheme for 300 years, will continue just as long as the plan is retained in the books.

Now let us see how a different visualization of light play might have avoided that error and led Kepler naturally into the formation of a plan that would have permitted the study of whole light sources, instead of a technical point source: Suppose that while out of doors he had appreciated the fact of the light converging upon him from the whole sky. The sky is a hemisphere above and around him and he a very small object resting in its light. With this pattern in mind he could have arranged a grain of white chalk on some dark surface and seen the light from his small frame converge upon it to illuminate it. On holding the grain very close to the flame he would have noticed the increased convergence of the light to it and its correspondingly greater intensity, while touching the grain to the flame he would have realized that the light was coming to it from a whole hemisphere of directions, just as the light came to him from the whole sky when out of doors.

Had Kepler visualized this convergent pattern of light play instead of that of spreading light, we might never have heard the term "Point source of light" as associated with intensity. He would have discovered that the point *seat* of intensity, in the molecule, would have solved the whole sphere of natural luminosity, in his teaching plan, so that students could have studied nature's plan of light play as it actually functions about us.

It is encouraging to note that Camille Flammarion, in explaining the sun's influence for light and heat on the different planets, ignored the Point Source theory and the pattern of spreading light entirely. In the book, "Astronomy for Amateurs," the English translation of one of his popular French books, on page 157, we find: "At that distance" (that of Jupiter from the sun) "the sun displays a diameter five (5.2) times smaller than that which we see and its surface is twenty-seven times less extensive; accordingly this planetary abode receives on an average twenty-seven times less light and heat than we receive."

In other words: As the planets get closer to the sun, the sun gets larger in the sky, and their brightness increases in the same ratio. It must be understood that this is precisely the same law that functions on turning up a flame or raising a window shade, when the distance is fixed.

As stated in the preface of my book, "Unit Photography," this truth of the importance of the convergent light pattern in creating intensity came to me independently, about the year 1895, as the result of my work with ordinary windows while making portraits in private homes.

It is of course true that Flammarion and Count Rumford used the same truth much earlier. Both these

[Turn to Page 29]

GREATEST INVENTION SINCE RADIO

*Men Will See in Dark and Fog; Color Films So "Real" They Startle.
Chemist's Discovery in Tiny Laboratory.*

*Kinema Revolution Gives Britain Lead Over Hollywood.
Makes Clothes Transparent.*

[The headlines above and the following article are from "The People, October 1, 1933"—a London paper 52 years old and with 3,000,000 circulation. Efforts are making to authenticate the yarn.—Editor's Note.]

Men will don spectacles that will enable them to see as clearly in the dark as they do by day. Captains of ships and pilots of air liners will look through the densest fog and travel at full speed ahead as safely as they do in the brightest sunshine.

The films will be revolutionized, pictures will no longer be flat black and white, but will be seen in all the glorious colors of nature with the same "depth" perceptible to the human eye—more real than the finest stereoscope.

All this will follow the perfection of a brilliant British invention, the greatest since the invention of wireless, which is now in its final stages.

At a secret show in a Liverpool kinema a special representative of "The People" was shown the most amazing film ever seen by man, made possible by this wonderful new process.

I had been with the inventor and a cameraman to Liverpool's new zoo (he writes), where we took "shots" of parrots and monkeys. We also filmed a dog jumping through a burning hoop. I saw the film developed. I saw it placed in the projector.

The Miracle Happened

Then the miracle happened. I saw the parrots again in their vivid coloring, not looking like pictures at all. The screen seemed suddenly to have become of three dimensions, with depth, as well as length and breadth.

We appeared to be looking out through a window on to the very scenes we had witnessed in the zoo. The monkeys' cages seemed to have been placed before us, and there the animals were swinging to and fro. It was hard to realize that the jumping dog was not actually coming toward us.

The invention has one astonishing result.

It makes many of the thinner garments worn by women transparent. It will no longer be possible to photograph actresses in thin nightdresses of the kind they now wear, for the flesh tints would show clearly through their clothes.

Bedroom scenes, at present passed by the censor, will become taboo for this reason.

In Dockside Laboratory

The invention, which has been perfected in a little dockside laboratory in Liverpool, is of a chemical nature.

A chemical compound extracted from a wild flower and mixed with other chemicals is added to the emulsion

on the film. This has the effect of trapping not only light and shade, but also the actual colors, and makes the emulsified surface as susceptible to light and color as the human eye.

It will, at one blow, remove the handicap under which the British film industry has labored by reason of the fact that the light in Hollywood is so much more suitable for photography than it is here.

With this new invention good films can be taken in a fog.

Natural color television is an obvious development of the future.

Natural color films which I have seen produced here during my weeks of investigation into the invention and its claims, cost little to produce, show every changing, shimmering light in a shot-silk dress, the colors in a girl's eyes, the play of light on her hair, the changing colors of a sunset's reflections in water and the lights of a bonfire.

They are as cheap, as quick to produce and as lasting as black-and-white films. The additional equipment for taking and projecting them costs but a few pounds.

While the City Slept

Night after night when the crowds filed out of the Regent Cinema, Crosby, which has been loaned for the experiments; I have stood with the little group of pioneers financing the invention, in the deserted theatre, and I have seen it lighted up with color thrown on to the screen from the same projectors used for the black-and-white films.

Arrangements are being made for the program there to be interrupted shortly with a surprise for the audience, who will suddenly see one of the new films spring upon the screen.

The invention may sound the death knell of some of Hollywood's stars—just as the talkies were the doom of others.

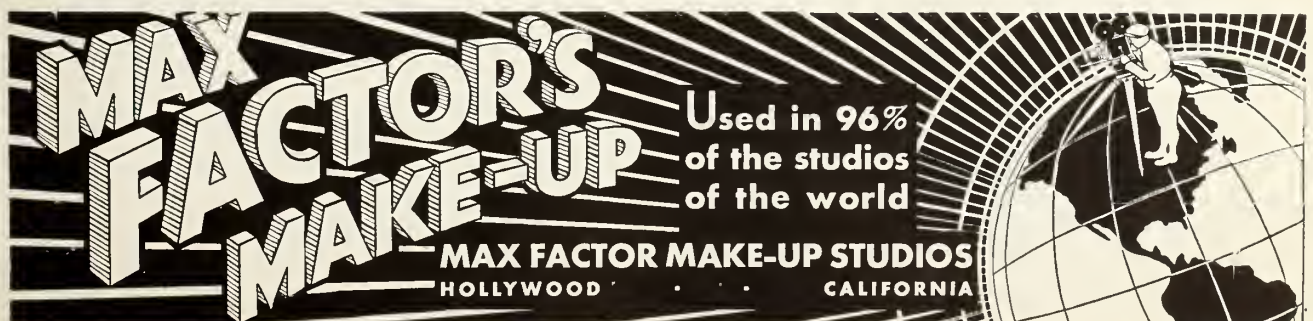
It will set a new standard of beauty on the screen, in which the natural color of the eyes and skin will be of paramount importance.

Once the public have tested these color films ordinary black-and-white pictures will seem to them dead and lifeless.

A company is in contemplation to keep this invention a British possession.

A vast foreign film corporation which knew of the struggles of the inventor offered him a staggering sum for his half finished work. He refused it.

Today, Herr Goebbels, the Nazi director of propaganda, is negotiating for German rights to operate the new invention.

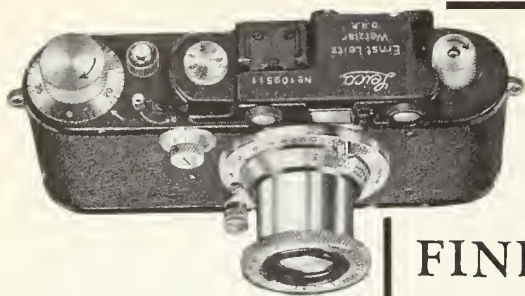


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single roll of cinema film. Negative
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*Write for free illustrated
booklet giving full
details of the
LEICA Camera,
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sories.*

*Designer's Specifications Reveal
Amazing Value Built in the LEICA*

Look at the drawing below. This is an exact copy of one of the drawings that LEICA craftsmen work from. No technical mind is needed to see at a glance that the LEICA Camera is really an extraordinary piece of engineering in miniature. Here is no mere assembly of intricate mechanical parts, but an instrument designed and constructed with the beautiful precision of a fine watch. The focal plane shutter, the built-in range finder, the film loading and winding apparatus and all outside controls are planned for the greatest speed and simplicity of operation. Every detail is finished and fitted by hand. And the famous LEICA lenses, the precision of which no drawing can show, complete the perfection of this remarkable camera.

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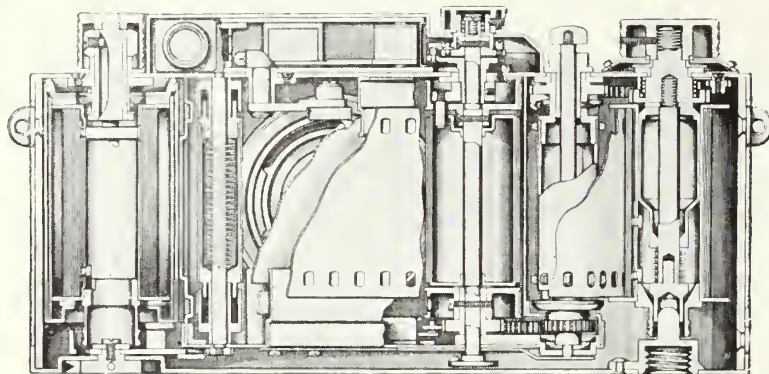


Diagram showing interior cross-section of the LEICA Camera

MINIATURE CAMERA CLUB OF PITTSBURG

The regular monthly meeting of the new organized Miniature Camera Club of Pittsburg was held in one of the lecture rooms of the University of Pittsburg's Cathedral of Learning, on Tuesday evening, December 12. Despite the extremely inclement weather which prevailed, thirty-five members attended, and were well rewarded for their enthusiasm.

The business session of the meeting disposed of, President Harry Bastow presented an exceedingly interesting and educational lecture on the fundamentals of fine grain emulsions and their development. Mr. Bastow, in preparing the lecture, conducted a series of experiments involving five of the most widely used miniature films, processing these in the fine grain manner, using a variety of the more popular fine grain developers. The lecture

was supplemented, and greatly enhanced, by the exhibition of 20X enlargements, and by projection of the test negatives through a micro-projector varying in magnifications from 100X to 1000X, which brought out with startling clarity the grain clumping tendencies of the various film and developer combinations.

The program committee has drafted a program for the next six months, with a view to laying a sound foundation in the fundamentals of miniature camera technique. From the reception accorded Mr. Bastow's lecture the succeeding programs are being looked forward to with much enthusiasm.

All miniature camera enthusiasts in the Pittsburg area are again urged to communicate with the Secretary, Frank McGary, at 3150 Landis Street, Pittsburg, Pa.

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SOMETHING NEW IN A DEVELOPING STRIP

By PAUL R. HARMER

FOR the benefit of the experimenter, Leica enthusiast and roll film photographers, the following described developing strip is an easy article to make and it lasts a long time without showing wear.

This little idea was developed by me sometime ago when I started my home laboratory, using it for short lengths of film when making tests. I have had excellent results.

At one time I had hopes of utilizing it for 1,000 foot rolls in a portable laboratory I had designed for use on an expedition, but as the expedition turned out to be another mirage, of which picture people have seen many during the past five years, I had neither the time nor the inclination to patiently sit in a chair and thread 2,000 feet of rubber through 144,000 sprocket holes just to get one length of developing strip in order to show a prospective financial angel that we could do things in a big way without asking the R. F. C. for \$90,000,000, like a certain politician did, while others couldn't raise enough cash to pay interest on the mortgage. Anyhow, I took a spoiled piece of negative, then I cut narrow strips of rubber, about 4 feet long from a red inner tube, and went to work threading this through the sprocket holes. The ends of the rubber do not need to be tied together, as it fits rather tightly in the sprocket holes, and just cut them off short enough so they won't ride on the edge of the picture or sound track.

For lengths of film up to 8 feet a frame or rack is not necessary. Be careful to tap the edges of the roll on the table for alignment before immersing it in the developer. As soon as the film becomes wet the rubber sticks to the edges of the film and holds rather firmly while you raise and lower the roll in the liquid for about a minute to force the bubbles from the face of the film.

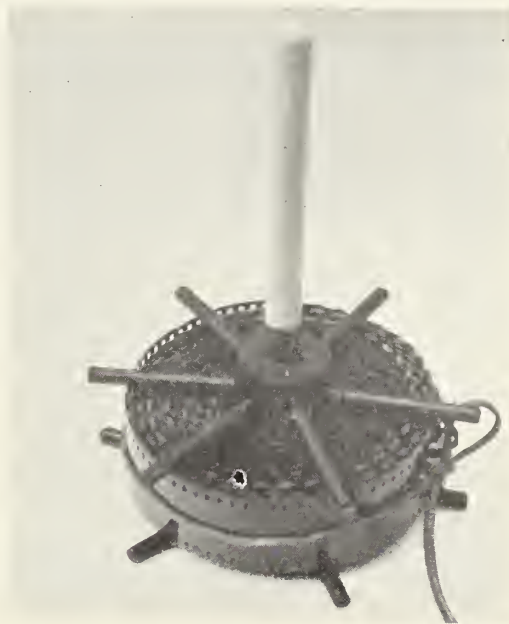
The rack is made of wood, painted with black lacquer and immersed in hot paraffin, the lower section is fastened securely to the handle, while the upper section slides loose-

ly up and down the handle.

For constructing this rack use 1½ inch round dowling for the spools, ¼ inch round dowling for the spokes and ½ inch round dowling for the handle, using waterproof glue to hold the spokes tight in the spools. The long handle keeps your hands out of the solution. (Those who have had metal poisoning will appreciate this.)

A celluloid covered thumb tack will hold the developing strip to the spool for a start and a rubber thong slipped over a spoke will hold the loose end of the developing strip, yet be elastic enough for film shrinkage.

This idea can be used on film larger than motion picture film by punching holes in strip celluloid, which is procurable in large pieces at auto supply stores.



JAPAN WINS AGAIN

In the Third International Contest for the best amateur film, held by the French Federation of Amateur Cine Clubs under the patronage of CINE AMATEUR, the first prize went to Japan, the second to France and third to the United States. Details as to the names of the winners and titles of their film will follow later.

In all probability the next contest will be held in Japan, although the winning country has the right to name any other country in case they do not care to undertake the next contest themselves.



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FILM MAKING IN INDIA

(Written for International Photographer)

By S. RAMANATHAN, *Editor of Sound and Shadow, Madras, India*



ILM production in India might be said to have begun in 1913, with the release of the first Indian silent picture. The first talkie was released about 1928 or 1929, but here the parallel between the American and Indian films stops. A comparison of foreign pictures and ours is a question of "look on this picture—and then on this." Our technique is so inferior to that of imported pictures.

At present there are nearly 20 studios in India, centered around the cities of Bombay, Calcutta, and and Kolhapur, with the probability of Madras having one of its own, and an equal number of independent production units making use of other studios. Excepting a few, which have been sound-proofed and fitted up with facilities for artificial lighting, all the others work by daylight.

On an average each company produces about four pictures per year, each picture, generally in two versions, one in Hindi, the *Lingua Franca* of India, and another in the local language, whatever it may be.

I think "talkies" in more languages have been produced in India than in any other part of the world. Till now, talking pictures have been made in English, Hindi, Urdu, Bengalee, Marathi, Tamil, Telugu, Arabic, Persian and Burmese. Pictures in Punjabi and Canarese are under production and I wonder in how many more languages pictures should be made to satisfy the demands of the 350 millions of India with its score and a half of languages.

There it is, the main problem that faces the Indian film producer. The circuit for any of these pictures is, of course, limited to the one province where that language is actually spoken. This naturally affects the capital outlay on each picture, which is governed by the returns, and this, in turn, restricts production.

When Hollywood, with its world-market, is itself finding the language barrier a pretty difficult obstacle to overcome, you can imagine the plight of the Indian producer with his much smaller field and still smaller returns. But the demand for pictures in local languages is insistent, and cheap and quick pictures have become, more or less, the producer's watchword.

A feature picture is usually anywhere near 13,000 feet in length—don't gasp—there are excellent reasons behind it. Primarily Indians, I mean the vast mass of illiterate humanity that forms the major percentage of India's teeming millions, and not the sophisticated and English-educated Indians, who, rarely go to see a picture produced by purely native means—demand long pictures. They seem to be willing to sit through any amount of footage so long as something is shown on the screen.

Secondly, the feature picture has to supply the whole evening's program, there being no "shorts" or "topicals" to supplement the show. Indian theatres, that is, those which exclusively show Indian pictures—never go in for "newsreels" and "cartoons," and no production unit in India has as yet taken to regular production of "shorts."

The story will generally be taken from one of the two great Indian classics—"Bharatham" and "Ramayanam" which forms the tradition of the land, or it will be a Muhammadan love-story, with plenty of songs. East Indians love songs—plenty of them. There might be anything from a dozen to three score, the latter in

one company's production—in a picture. Social pictures are almost taboo.

Coming to production proper, standards are much lower than that of imported pictures, due to the pecuniary and other difficulties necessitated by the restricted market. Trained technicians are few and far between. The majority of cameramen have but a smattering knowledge of English, which prevents them from keeping up with the latest developments in emulsions and filters.

Panchromatic film is only slowly coming into general use. The use of filters is very limited and over-correction and special effect use of filters is almost unknown. Except in one studio, where they have fitted up an Automatic Debie Processing Plant, developing is entirely by the rack and tank method, both for sound and picture, positives and negatives. "Cutting" is done entirely in the negative itself, no "rushes" of the day's work being printed.

Film is rarely wasted and the extra footage that is invariably wasted in cutting American pictures is never shot in Indian studios. Retakes are few, compared to foreign studios. The Indian producer's aim seems to be to use all the footage taken, very little being scissored off. Feature pictures, on an average, are completed in about a month's time and cost from 10,000 to 30,000 Rs.

Coming to technique proper; photography and direction are more stagey, perhaps, than in any other country. Daylight being the source of illumination and, it being difficult to effectively light sets, the picture consists of a majority of medium and close shots, taken at eye-level. This is further necessitated after the advent of sound pictures by the microphone having to be placed as close to the actor as possible to effectively catch the sound, there being no properly sound-proofed studios.

The script-girl is an unknown entity in the Indian studios and a pre-conceived scenario itself being sometimes absent, some directors carry it all in their heads.

The camera is rarely moved from the normal eye-level angle and it is still more rare to find the camera traveling to and from the subject. This fixed camera naturally restricts the movements of actors. Without taking into consideration the emotional requirements and necessities of the scene, only two studios in India make proper use of their trolleys and only in their pictures do we see mechanically smooth traveling shots in one plane. The crane is a novelty that is yet to come into the picture business in India.

Movement of camera is further limited by the small sets, which generally consist of a few flats, with doors and windows and other necessary decoration painted on them in a dull brown color—showing that our cameramen haven't yet got out of their "ortho" days—placed on one or two sides. This, of course, limits the camera to that one angle. Reverse shots, naturally, are impossible, there being nothing but the studio compound on the other side.

The camera has to be very carefully placed, to be within bounds, and this careful placement does not give the cameraman an opportunity even to "pam" on an action. The only variety he can afford is to change from 25 mm. to 50, and back again, which generally happens when the dialogue breaks down, when the director asks the lens to be changed and proceeds with the action.

Foreground, which in almost all long shots, occupies more than half the frame, due to the improper placement of the camera, is more often than not left completely blank, placing of foreground objects being an exceptional rarity. Even if such objects are placed, they do not help to give that depth and perspective we see in American pictures, due to the mechanical limitation of the light having to come from behind the camera. This naturally lights up the foreground more prominently than anything beyond, where it will be casting shadows, and you can imagine the sight of a brilliantly lighted foreground figure all fuzzy and out-of-focus. Thus foreground objects, even if utilized, instead of helping to create that illusion of relief and depth, only serve to destroy it.

Lighting, as I have said before, is almost always from the front, coming from a row of silvered reflectors placed in a row, outside, tilting the sun's rays full into the studio, giving a flat over-all illumination, at an absurd angle, from a few degrees below the horizontal, the reflectors, as I mentioned, being placed on the ground. Even in studios with electric lamps power is insufficient for long shots, when they too are forced to use daylight. Under the prevailing conditions you can understand how difficult it will be to light a scene according to the requirements of the emotional mood.

This flat photography is further aggravated in the printing. Printers are generally operated by raw youths, who take their cue from the shadows and never expose sufficiently for the high-lights, with the result that the picture looks pale and ghostly.

The eye-level perspective painted on the canvas-flats is one more reason for tying down the cameraman to the eye-level angle.

Of course, these are not unsurmountable obstacles and even without much undue expenditure, things could be bettered. But here, the ignorance of the cameraman, who works by rule of thumb and has not yet got into the habit of thinking in "angles," comes in the way. Partly, the audience also is to be blamed, not caring for better pictures. In fact, they sometimes even resent Quixotic angles. I remember the instance when a friend of mine, a regular observer of foreign films, found fault with all the angles of Pabst! Then what about the poor

illiterate Indian? Give him plenty of songs, a few hand-to-hand fights in the good old Western style with a chase and a last-minute rescue—those silent Eddie Polo and Elmo Lincoln serials are still going strong here, though America might have forgotten them—and he is content that he has got his money's worth. The coming of the sound pictures destroyed that class of pictures, and excepting the few jungle pictures like Tarzan and Big Cage, none of your sophisticated stuff goes well with the Indian audience. Little speech and plenty of action and songs, and devil take the technique, so says the mass, and that partly is why Indian producers, in spite of their numerous faults and in spite of the heavy odds they have to overcome, pull on splendidly.

Of course, for every rule there is an exception, and so also there are a few directors in India with brains and ideals who are trying their best to improve the standard of Indian pictures, and some of the recent pictures do show that their attempts have not been wholly unsuccessful. The hope is, that in a short time, India will produce though not pictures of such a standard as yours yet something of which she need not hang her head in shame as at the moment.

In this connection it is interesting to note that the Artreeves products manufactured in Hollywood, are the most widely used in India.

AMAZING GROWTH

In the four months since July 1, 1933, the American Federation of Labor has granted charters to 825 new unions. The number of new charters issued for all of 1929 was 75. In other words, 11 times as many new unions have been organized in four months of a depression year than were formed during the entire 12 months of the 1929 boom period. The charters issued by the A. F. of L. are to local unions affiliated directly with it and composed of workers in occupations over which no international union has jurisdiction. The international unions themselves have organized thousands of new local units and have added millions of members to those which were already in existence.—Labor.



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THE LINE LENGTHENS

Another beloved brother of the craft, John Shepek, Jr., took his way into the sunset the other day at Santa Monica Hospital surrounded by his father, his sister Alberta and his foster-brother Roy.

John passed away on December 23, and was buried from Saint Monica's church the day after Christmas, interment following immediately at beautiful Calvary Cemetery.

The illness which culminated in his sad passing siezed him while accompanying Eddie Lindon on the famous Under Three Flags expedition conducted last fall by the Socony Vacuum Company of New York.

He was sent to Chicago for treatment and was there operated upon for appendicitis, but with only temporary

relief. He returned home as soon as he was able to travel and from that time steadily failed until his death.

Deceased was born in Kansas City, Missouri, October 2, 1905, and thus at the age of only 28 he lays down his earth life for the Great Adventure.

He was popular among his associates of the studios, was a loyal and enthusiastic member of the International Photographers and a craftsman of excellent reputation. For many years he was associated with the late Robert Kurrle and with Al Greene, the three of them constituting a modern "Three Musketeers."

It is with profound grief that the men of Local 659 stand in the presence of this untimely death and their heartfelt sympathy is hereby extended to the sorrowing family.

THE SALISBURY RIOTS

(Continued from Page 21)

get his truck out of the river. Mob spirit was still high, and he was advised to leave the truck at the bottom of the river until it would be safe to raise it, and was again told that Salisbury was not too healthy for him.

Paramount covered the Salisbury riots in spite of a truck being thrown in the river. When Tugander phoned the office that the truck was gone and the rest of the \$25,000 equipment, the riot squad pulled out of New York to get the Salisbury coverage. Santone flew down from New York and was getting some shots of the mobs milling around the streets of the town, when the plane developed engine trouble and was obliged to make a forced landing. Fortunately, they made the airport. When the motor was fixed, Santone went up again, but it was too dark to get any more pictures. The pilot again reported engine trouble and they landed in a farmer's field.

Urban knew he would be in for trouble if the farmer knew he was a cameraman, so he hid his equipment. When the farmer came out to see who was landing a plane in his field, Santone was ready to meet him. "What are you doing here? Who are you? Another of those damned photographers?"

"Me?" Urban replied, "no, I am not a photographer. I'm a surveyor. I have been flying over this section here getting a map, and I had to land in your field because it got too dark and I couldn't get back to the airport." The farmer thought this was a funny story,

but let Urban go up to his house to telephone. While Urban was telephoning, the farmer's young son, a bright and inquiring lad of twelve, went to investigate the cockpit of the plane with his searchlight. The boy dug around until he uncovered Santone's camera and read on it "Paramount News." When Urban got back from telephoning the farmer accused him of being a cameraman and told him to get off the farm. "They'll string me up with you if they know I let you stay here," the farmer said.

But ordering Santone off the farm and getting him off were two different things. The nearest railway station was fifteen miles away. Santone doesn't enjoy walking fifteen miles, especially if he has to carry his equipment. After some argument, the farmer proved to be more humane than afraid of the riot, and found that a Ford could be had to take Santone to the station. A negro was to drive the car, but he balked. "Ah won't drive no cameraman to dat dere town. If he ain't scared, Ah is!" So Urban covered his cameracase with his overcoat and drove the car himself. The film came on from Baltimore by plane and was in the laboratory the next morning and was put in the reel that was being made up that day.

THANK YOU

The photograph printed in "The Story of Slides and Titles" which appeared in the December issue of International Photographer was loaned through the courtesy of Leo T. Young and the Los Angeles Museum.

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ORIGIN OF THE POINT, ETC.

(Continued from Page 22)

men failed, however, to visualize the whole scheme. Neither recognized, so far as I am able to learn from their writings, the fundamental importance of complete spherical and hemispherical illumination, nor the fact that the molecule was the true seat of intensity. If they had grasped the full scheme I am confident that the point source theory would already have been dropped from the books.

Milliken and Gale illustrate this basic truth as regards whole light sources, by including in their book, "A First Course in Physics," on page 393 of the 1906 edition, the photometer of Count Rumford which illustrates the functioning of whole flames. The authors also teach the same truth in their remarks on the standard candle. They say correctly (p. 394): "In general, then, the candle power of any two sources which produce equal illumination on a given screen are *directly proportional to the squares of the distances of the sources from the screen.*" (Their own italics.)

Note that whole light sources are involved, while the area of the receiving screen is not referred to. This is as it should be.

It is lamentable, however, that these distinguished authors offset the good effect of this correct teaching by illustrating also the erroneous point source figure on page 392. Here it is stated (after saying the usual thing, that light weakens by spreading over four times the area at distance two as at distance one): . . . *the intensity of the illumination due to a given point source must vary inversely as the square of the distance from the source.*

Note here that the technical point source, and not a whole source, is involved, while the area of the receiving screen is used as a factor in the problem. This statement I hold to be erroneous. It is the exact opposite of their statement first noted, which is the true one.

Dull, in his "Modern Physics," also illustrates both theories. This contradiction results in the student's complete confusion as to the truth of light intensity.

The fact, however, that these authors do include the truth, is hopeful, since there is left to be done only a more comprehensive elaboration of the truth and the omission of the error.

In my next article I will give my own classification of the patterns of illumination which function in nature. I will show that there is one pattern in which intensity remains constant through a considerable distance from the source, and another pattern in which the intensity varies inversely to the distances instead of to the squares of the distances.

I will also give my basic law of intensity which applies to these various seemingly contradictory patterns and also to full hemispheric illumination, as from the whole sky extension.

Any reader who desires to keep this series of articles for reference should secure the number of August, 1932, the last, this present one and the two or three which will follow.

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WANTED—To know of the whereabouts of motion picture relics, documents, or equipment of a historical nature for Museum purposes. Write Earl Theisen, care of International Photographer, 1605 Cahuenga Ave., Hollywood.

TRICK PHOTOGRAPHY. Exclusive agency for three leading Hollywood makers of trick lenses. Apply for prices and demonstration, sale or rentals. Camera Supply Co., Ltd., 1515 Cahuenga Ave., Hollywood.

NOTES ON MARINE PHOTOGRAPHY

(Continued from Page 15)

just how to adjust his camera in order to secure the best possible results, as far as exposure is concerned anyway. These meters are small, compact, require no re-fills, last a life-time, and are absolutely accurate. The marine photographer who aims to secure the best photographs is urged to invest in a reliable exposure meter, for by means of it, film wastage is entirely eliminated. The meter, therefore, may be said to pay for itself in a short time.

The problem of what film to use is admittedly a difficult one, for with so many types and brands on the market, even the professional photographer is apt to become confused. For average yacht photography, a fine-grain, fast orthochromatic film seems to be the most satisfactory. Of this type of emulsion, films like Kodak Regular, Kodak Verichrome, Agfa Regular, Agfa Plenachrome, Gevaert Express Superchrome, Perutz Persenso, Voigtlander, Mimosas Extrema, Selochrome, and Kodak Panatomic are recommended highly.

Where full color correction, or special filter effects are desired, a panchromatic film must of course be used. This film has the property of recording practically all the colors in the spectrum, hence becomes a valuable tool in the hands of the skilled photographer. Practically all film manufacturers offer one or more brands and types of panchromatic emulsions.

The developing and printing of films is looked upon as sheer drudgery by a great many amateurs, and the yachtsmen hold that this work cannot be done on board because of the space and equipment required, however, the plain truth of the matter is that the developing and printing of pictures from miniature cameras is not only delightfully easy and economical, but inexpensive as well. As for doing this work on board the small boat—why the modern developing tanks are so small and compact that films could be developed in a rowboat! Actually. A few ounces of solution only are required, and once the film is loaded into the tank in darkness (a changing bag, for example, in the daytime), the subsequent operations can be conducted in the light. This automatically frees the worker of a darkroom such as is commonly supposed to be necessary when processing photographic materials.

Owners of cabin boats have everything right in their cabins to carry out the developing of the film with the utmost ease and convenience.

Every amateur photographer should really do his own developing at least, because the commercial finishers are not over-particular as to the results. Especially is this true in the case of miniature camera films. Commercial finishers have not as yet learned to handle the tiny films with as much respect and delicacy as they might, hence it is to the amateur's advantage to do this work himself and be sure of the results. This imposes no hardship, on the contrary, it is delightfully interesting. Try it sometime.

We have covered but a few of the most important points to be observed in photography as applied to boating, but the main idea is to indicate how easily and successfully the yachtsman can make photographs while afloat. It is the new companion to boating, and those who have struck this combination of a boat and a camera are intensely enthusiastic. You, too, will become enthusiastic if once you taste of the pleasures which photography affords.

The next meeting of the L. A. Amateur Cine Club will be held Tuesday—not Monday—January 9, 8:00 P. M. at the Eastman Kodak Company, 6706 Santa Monica Boulevard. Another contest for you of uncut and unedited film. Prizes: One roll each of 100 and 50 feet, donated by Eastman Kodak Stores, Inc. Showing of "Rice," the Japanese picture which won the 1933 gold medal award in the American Cinematographer International Contest . . . "Panama" by member I. O. Levy and more of "China" by Tracy Q. Hall.

Please mention The International Photographer when corresponding with advertisers.

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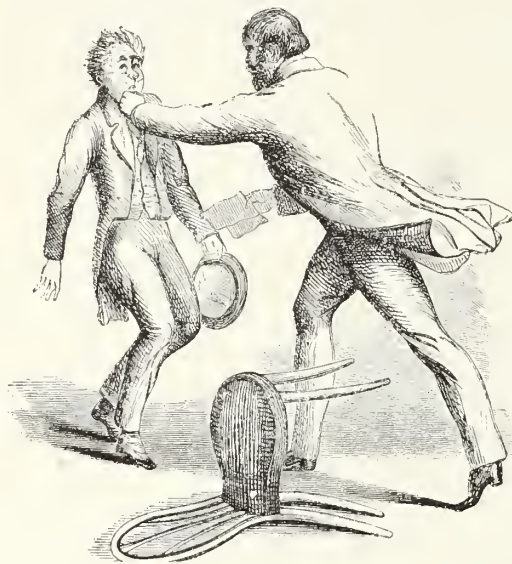
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Out of Focus

By Otto Phocus

HAPPY NEW YEAR



This remarkable action still was posed by our staff photographer, Les Rowley, and depicts with accuracy the welcome received by an assistant cameraman upon presenting his cameraman with a set of New Year's resolutions. Attention is called to the out-stretched arm of the cameraman with which he greets his assistant.

The resolutions are printed for your guidance. Just another service rendered by the International Photographer.

RESOLVED

To take my hat and coat to the dark room and not bother my asst. with it.

To pay him back all the money I have borrowed from him in the past year.

To furnish him with gasoline when he runs errands for me.

To return all the tools I have taken from his tool kit.

To go and get my chair when my asst. is resting.

To make exposures for the lab. and not for the exposure meter.

To swing over the camera when the asst. is loading film.

To focus all scenes before they are photographed.

To ask him up to the house for a drink, for a change.

To blame all buckles on the recording system.

To remember him on his birthday.

To laugh at his jokes when he tells them.

To excuse his mistakes when he makes them.

To pay all his dues and buy his lunches.

To help him carry his equipment when he is tired.

To let him line up all shots.

To take in the tape and mark the feet.

To give him screen credit if he wants it.

To hold the slate if he will let me.

And-d-d-d to receive any other little suggestions that he might offer during the coming year.

DO YOU KNOW

That there is to be a new chief cameraman at the United Artists Studios.

That Paul Perry and Bob Miller have left for the Orient, to be gone about a year.

That I will be able to use another robe by the time they get back.

That four years ago the second of this month, 10 men were killed when two planes crashed over the Pacific.

That three were members of the International Photographers.

That from latest reports, Ira Hoke is leading the life of a gentleman farmer.

That the musical number "I Love a Parade" would be a good theme song for a coming release.

That I would like to hear from Bob LaPrell as to what he is doing, if any.

That Bob Martin sends greetings from 22 Graystone Lodge, Hanger Lane, London, W.5.

That Hanger Lane is a much better address than Hanger Lane.

That Roy Clark was assigned to location in China for M. G. M.

That Joe Walker has the largest collection of lenses in the business.

That Bert Glennon was a purchasing agent before a cameraman.

That the first complaint Ed. Estabrook handled after taking over his new duties was from the Ko-Op-Kitchen. No salt in the beans.

That Fred Westerberg is running out of ideas for his tables. (Submitted by J. F. W.)

That the "color shorts" I received for Xmas were received with gales of laughter on the first pre-view.

That it is rather difficult for a cameraman to remain "upright" and shoot a hi-hat shot.

That Reggie Lyon's boy joined the Sons of Legionnaires. The boy, as tall as Reggie, gave the impression that Reggie must have been in the Civil War.

That the picture at the head of this page should not fool you. I am not a nudist. Hardly ever.

PHOTOGRAPHIZZ

Fill ground glass with cracked lenses.

1 jigger Mitchell oil.

1 pony lens cleaner.

Dash of emulsion.

1 twist of sex peel.

1 slice of belting.

1 A. filter for coloring.

Stir with pan crank.

Strain through gauze matte.

Garnish with B. & H. perforations.

Serve on a dolly so guest can be moved if necessary.

CAMERAMEN TAKE NOTICE

Rob Wagner's Script never fails to boost the cameramen in its reviews of pictures and a good way to get even with Rob is to subscribe for the famous Beverly Hills magazine. It costs only \$3 a year and there is nothing of its kind in the field of motion picture literature. The address is 9492 Dayton Way, Beverly Hills, California.

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FEBRUARY, 1934

VOL. 6
NO. 1



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One of the many beautiful shots from the Warner Brothers
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DIRECTOR OF PHOTOGRAPHY

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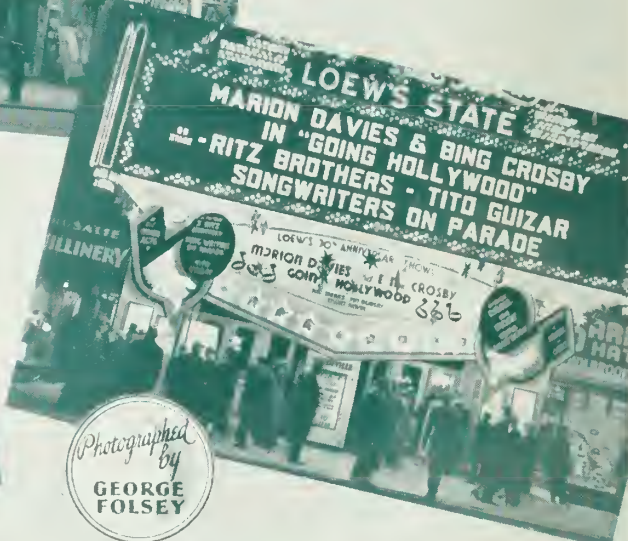
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PART OF THE PROGRAM FOR MARCH

Paul Harmer will do his part in the March issue by presenting the most illuminating article we have yet seen on the subject of "Motion Picture Miniatures."

F. Morris Steadman, the Miracle Man of Light, will be back with "Patterns of Illumination," another masterly study on light that no photographer should miss.

And if the reader happens to be interested in 16 mm. subjects there will be something most attractive in March. Look for this department. It's gonna be good.

Mr. W. Wallace Clendenin, who "pinch hits" this month for Earl Theisen, our brilliant young historical writer on motion picture subjects, will return soon with another article on a timely subject.

Miss May Gearheart, Supervisor of Art in the Los Angeles Schools, will present her interesting article, "Art in Motion Pictures." Because of previous reservations it was necessary to defer the publication of "Art in Motion Pictures" to March.

Augustus Wolfman, editor of our Miniature Camera Department, will offer the third of his extraordinarily fine technical articles. This series by Mr. Wolfman will prove to be a liberal education to the students of the miniature camera.

Our Television Department will have something of unusual merit to offer and, as this is to be a permanent feature of our magazine, it will behoove all interested parties to watch it closely for the latest news. By the way, cameramen would do well to keep their eyes on Television. It may mean jobs some day.

HONOR TO MR. THEISEN

Earl Theisen, Honorary Curator for Motion Pictures of Los Angeles Museum, whose interesting historical sketches have attracted International attention, is absent from our columns this month to permit him to write an article for the League of Nations. The subject will be "Archeology of the Motion Pictures." The article will be published in the International Encyclopedia of the League. Mr. Theisen will be back in the International Photographer in March.





UNDER THREE FLAGS EXPEDITION

By EDWIN G. LINDEN

THE Under Three Flags Expedition," while not known in Hollywood, was an important and extensive undertaking and its wanderings and findings were made into a big picture. We traversed the highways and byways from the northernmost point in Canada, to the southernmost point in Mexico that automobiles are able to get to under their own power. It is true that there is no big name such as Mae West on the main title for all that we featured in this film was oil, and especially Socony-Vacuum oil. At first it seemed rather strange that an oil company should be willing to make a feature length picture just for their own use but I soon found out why. They had developed a new oil that is soon to appear on the market and our film was only to sell the idea of the extent of research that had been conducted to prove the oil, not to the dear public who will never see our masterpiece, but to the thousands of distributors and dealers over the entire country, and when it is eventually placed on the market there will be \$5,000,000 spent in advertising in order to sell it to the public.

There were fourteen cars in all, each a well known brand and ranging from Ford and Chevrolet to Cadillac and Pierce-Arrow. All were painted and equipped alike and they made an impressive sight to the millions who saw the caravan in its three months' traveling through three countries.

I should here give credit to those to whom I refer as "we" of the camera staff. There was Otto Hesse, of New York City, still photographer, and the late John Shepek, Jr., assistant cameraman, who was taken ill in Chicago and was replaced by Bill Reinhold in Cleveland.

Our photographic equipment included two Mitchell standard cameras, two Filmos, three Graflex, two Leicas and forty kodaks with the several other brands of miniature cameras scattered among the personnel of the expedition. According to this showing they were certainly camera-minded.

Our official start was 1,200 miles north of the U. S.-Canada border and fourteen miles north of Noyahewin, Alberta. Here the few wagon tracks that had formed the road branched off in various directions and were soon lost in the tall prairie grass. Only a single telegraph wire continued north to be the only communication that people from there on have with the outside world unless they go on foot or dog-sleds. A telegraph operator hooked on this line, keyed out our start to the world, while the boys for the first time in two weeks broke out the camera equipment to make our first image on grey-back. Our pictures here will prove to anyone who cares that northern Canada is all the same as Kansas.

While fourteen mud-covered cars started out with horns honking we registered the start at F/4, which is all October noon light in Noyahewin is worth on anybody's film. Ours was the task of putting on negative a record of the trip, not only to be interesting, but to be instructive to the many men with technical minds who would analyze the results.

The road back was a repetition of what we had been through the previous ten days in getting here. Two

hundred miles of muskeg roads with gumbo mud so deep that the axles dragged and so slippery that it was as easy to go sideways as forward, yet every day we progressed south was the consolation that the days would get longer and warmer. Often at night we plowed ahead under the guidance of the northern lights, but it was slow going as the rains had made the roads nearly impassable and it often required all hands to free the cars that had sideslipped into the ditch.

The light cars naturally were the best performers in the mud, the heavily laden camera car seemed to have a yen for the ditches and received its share of harsh words, the pictures show only the physical side of the mud battle, it really needed sound to convey the spirit of the men, who knee deep in mud pulled on ropes or pushed on fenders while they sang our anthem of "Beef, More Beef," to the accompaniment of roaring engines. Eight horses on foot were worth more than eighty under the hood.

Once through the mud we traveled rapidly over fine graveled roads which took us through the towns of Edmonton, Saskatoon, Moosejaw and Regina. We had the pleasure of shaking hands with Premier Bennett, who wished us well, and of visiting the barracks of the Royal Canadian Mounted Police, where we were entertained by their drills, and we in turn entertained them by taking their pictures, the first time anyone has been accorded this privilege. As fine a body of men as anyone would care to meet are these Royal Canadian Mounted Police.

At Nor Portal where we crossed the line we found it was much easier to get out of the United States than it was to get back in. Ten days from the start and we were in Chicago where the boys had a chance to see the Century of Progress, and many thousands at the Fair had a chance to see us.

From Chicago our route was east through Detroit, Cleveland and Buffalo, past Niagara Falls and across the Empire State, some of the most beautiful scenery of the trip so far, all the hills were covered with autumn foliage, each in a different shade of the gradual change from green to brown to red to orange to yellow.

And the greatest novelty of all was the complete lack of signboards. In Storowtown, N. Y., we visited a collection of old Colonial buildings which had been brought from their original sites and re-erected here in surroundings in keeping with their age, an entire village was formed and each of the buildings had been built during revolutionary times, not of 1933, but of 1776. Here we were able to put a little comedy and story into our film that was fast becoming a travelog of the roadways. We were blessed with a clear sparkling day that made the pictures of Storowtown stand out above the wonders of the three countries that comprise the finished picture.

Historic Boston was interesting, not for any photographic reason, for it was again F/3:5 at high noon, but its winding streets and quaint buildings had a charm that will long be remembered. At New York City we had a day—while everyone rested and reorganized for the trip to San Antonio. But not the camera crew;

whoever heard of them resting? There were stock shots to be made for the studio, for we couldn't come back empty handed.

We also used some film on the New York City police radio system, here the inner workings of that unit were very interesting, for their efficiency enables them to have the fastest radio police service of any city in the United States.

From New York to San Antonio was one grand triumphant procession, of course there were a few stops for pictures—at the Indianapolis Speedway, the War Memorial in Kansas City, road shots of the caravan through various types of country, raging oil well fires in Oklahoma City (for the studio) and the capitols and governors of most of the states. And always we were

moonshine. Here the trio of "Hesse, Reinhold and Linden" rendered German ballads while the crowd roared.

So well and often were we banqueted that I began to hate lobsters, oysters, chicken and filet mignon and longed for some of the wife's good old corned beef and cabbage.

Through most of the states and Mexico we had police motorcycle escorts and with their guidance we passed so many stop signs that most of our boys got the habit and will find it very embarrassing when they get back to normal. And here, let me add, that nowhere on our entire trip did we see one motorcycle officer hiding just around the corner.

We finally reached San Antonio, ten days out of New York, and entered that city with a motorcycle



Top Left—Cathedral at Mexico City. Top Center—The Camera Car. Top Right—Cathedral at Monterey. Center Left—in the Crater of Mt. Toluca, 14,500 Feet Elevation. Center of Layout—"The Scout," Kansas City, Mo. Lower Left—Canadian Mud. Lower Center—The Far Famed Alamo. Lower Right—More Canadian Mud, and Above—Mr. Linden Shooting from the Hood of the Camera Car.

cursed with bad weather.

Besides the three of us in the camera crew every member of the expedition was a potential photographer, at each stop all the kodaks came out, and to the man they would ask, "What exposure?" By the time St. Louis was reached either Bill or Otto would call out the orders for the day, informing all kodakers what the aperture should be. From the amount of film used the Eastman Company should have been willing to sponsor the trip instead of an oil company.

We were wine and dined every night in grand style, so different from the ordinary location. Advance publicity always reached the Socony-Vacuum representatives in time for them to prepare a banquet to out-do what had been previously done for us. The high spot in this part of the journey was in Wichita when the camera department became slightly over-exposed from Kansas

escort of eleven officers that sounded like a three-alarm fire. Here we were again to rest and prepare for the trip into Mexico, at least that is what the schedule said. That schedule bothered me as it was the only thing that made the trip seem like a motion picture company.

Here in San Antonio we were to do our most important work on the entire trip, tests were to be made here and elaborate preparations were going on, all of which had to be registered on the Eastman super.

The tests made here were of vital importance to the oil company, as the superiority of the oil had to be proved. Outsiders were all concerned with the individual performance of the cars but the records were not made public, even to us, as this was a test of gas and oil and not of cars. From my personal observation all of the cars did remarkably well.

(Turn to Page 25)

MINIATURE CAMERAS AND PHOTOGRAPHY

GENERALLY, in classifying films according to grain, orthochromatic is at the head of the list, panchromatic follows, and supersensitive panchromatic emulsions display the coarsest grain. There are exceptions as in the case of Micropan and Panatomic films. Here are two excellent films exhibiting a grain which is finer than that obtained with many orthochromatic emulsions, and they also possess the additional advantage of complete color sensitivity. They are, however, relatively slow in speed, Panatomic film having the same speed as ordinary N. C. Kodak film, and Micropan being about $\frac{1}{4}$ as fast as an ordinary panchromatic film. This emulsion was formerly known as Quarterspeed Panchromatic, its new name most likely having been adopted through the fact that it is extensively employed in photomicrography.

Micropan film is contrasty, and possesses a relatively thin emulsion. In order to avoid excessive contrast it is recommended that it be developed for only $\frac{2}{3}$ of the normal time.

It was mentioned before that Panatomic film has about the same sensitivity as ordinary N. C. film. This is a difficult comparison to make. During the middle of the day this may hold true. In the early morning, or late afternoon, when daylight exhibits large quantities of red and yellow, the speed of N. C. film will be far below that of Panatomic, for the latter is fully color sensitive whereas N. C. film is blind to yellow and red. Similarly with the use of artificial light N. C. film cannot hope to compare with Panatomic in speed. The chromatic sensitivity of the latter is similar to that of supersensitive panchromatic film. The filter factors for both of these emulsions are therefore similar. Filter factors for Panatomic film are as follows:

Filter	Daylight	Tungsten
K1	1.5	1.2
Kodak Color Filter....	1.8	1.4
K2	2.0	1.5
G	2.5	2.0
X1	5.0	....
X2 .....	....	5.0

Because of the extreme contrast it produces Micropan film is recommended for photomicrography, and copy work. When desired to use it for ordinary purposes a soft developer should be employed; its slow speed will however limit its employment in general photography. This film is only supplied for the cine type camera.

The use of a hardening bath: The principles upon which miniature photography is based demand the utmost care of the negative. A small scratch which may be barely visible on the tiny negative will reveal itself to be a serious marring factor when the negative is enlarged. During its employment in the production of prints the negative is unavoidably handled to a certain extent, and is thereby subject to suffer slight scratches. In order to prohibit such detriments it will be necessary to toughen the film while it is being processed.

I have found an excellent hardener for the emulsion to be the chrome hardening bath recommended by Eastman for the processing of films under tropical conditions. The formula for this bath is as follows:

Potassium chrome alum.....30 grams
Water to make..... 1 liter

For those not possessing metric weights, a conversion

By
**Augustus
Wolfman**



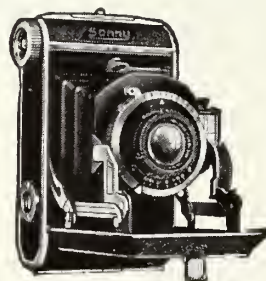
of the above formula into avoirdupois weights is—chrome alum one ounce and water to make one quart. After the film has been developed it is rinsed and then placed in the above hardening bath for at least three minutes. Longer immersion will do no harm. It is necessary to agitate the film for about 45 seconds when first immersed in this bath, to prevent the formation of blisters and a sludge of chromium hydroxide. From the hardening bath the film is transferred to the fixing solution, the rest of the processing concluded in the usual fashion.

Potassium chrome alum solutions do not keep very well, so that the hardening bath should be made up just before use. Although it can be used for a number of films, it is advisable to prepare a fresh solution for each film, for as the concentration of the developer brought over by the films increases, the bath rapidly loses its hardening properties.

Films treated with this hardener should be carefully wiped after washing and before drying, to remove any chromium scum present. The latter if not removed, will cause a stain that will resist attempts to remove it.

On leaving the chrome alum bath the film will be so hardened that the gelatin will not dissolve off in boiling water. This is quite a degree of hardening, for ordinarily the gelatin will run off the film when it is placed in hot water. Boiling water will clean the gelatin off an unhardened negative with lightening rapidity.

There is also a commercial process available known as the Scratch-Proof Method, which hardens the gelatin to such an extent that determined efforts to scratch it will fail. Photographers who possess valuable miniature films which are frequently called upon to produce prints should investigate this process.



The Vest
Pocket
Dolly

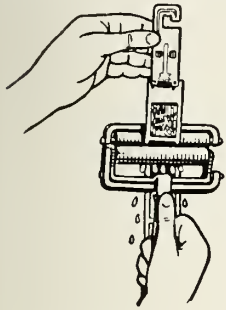
The Dolly Camera: Here is a fine little camera that is supplied in models to suit many needs and purses. The Dolly is not a new addition to the miniature camera field. It appeared just as miniature photography was springing into popularity and is really one of the pioneers that helped the miniature rise to the popularity it now enjoys.

The Dolly is supplied in two models, a miniature size which takes 16 pictures each measuring $1\frac{3}{16}$ by $1\frac{9}{16}$ inches on a roll of vest pocket film. The second model takes the full vest pocket size picture. Various lens and shutter equipment are supplied, from a camera having a Certar f:4.5 lens and Vario shutter, to one equipped with a Compur shutter, and a Zeiss Tessar f:3.5 or Ultra High

Speed Xenon f:2 lens. It serves as well both for the beginner and the advanced amateur.

Drying the Film: It seems tragic that after being correctly handled throughout its processing, the film should receive mars in the last step—drying. This occurs to many miniature camera workers. Drying of the film should not be regarded as just another perfunctory step in its processing. It deserves as much consideration as the choice of the developer.

After the film has been washed and hung up to dry it must be *carefully* wiped to remove all excess moisture. Droplets of water left on the film are apt to cause water marks.



The Brooks
Film Dryer

The selection of the material to be used to remove this excess moisture must be given careful consideration. Ordinary cloth will not serve the purpose, for it contains hard surfaces which are prone to scratch the film. When it has just been removed from the wash water, and especially if it has not been subjected to a hardening bath, the emulsion will be relatively soft and subject to scratches.

Suitable materials include, chamois skin, absorbent cotton, a Viscose sponge, and a Brooks film dryer. Chamois cannot be used unless it has first been soaked in water for a sufficient time to render it slimy to the touch. The absorbed water is then pressed from it and it is ready for use. Absorbent cotton is first immersed in water for a few seconds, after which it is pressed to remove as much water as possible, and then used. The Viscose sponge is a new importation by Willoughbys which is very soft, and possesses a remarkable affinity for water.

The Brooks film dryer is a departure from the type of wiping agent thus far described. It consists of two rubber rollers between which the film is placed and pulled through. All excess moisture is removed, without the film receiving any scratches. It may be interesting to our readers to know that this film dryer is now manufactured by Burleigh Brooks the well known importer of photographic goods.

When using one of the wiping materials described the film should be stroked very gently, and no pressure applied. The material may contain a small piece of gritty matter which will scratch the gelatin, if pressed into the latter.

Many photographers keep chamois skin or absorbent cotton constantly soaking in a jar of water, to insure extreme softness before the material is used. This is a wise step.

Miniature camera workers who employ absorbent cotton should examine the film closely after it has been dried for small strands of cotton which may have adhered to it. These are easily removed with a soft camel's hair brush. They show up annoyingly when the film is being enlarged.

After the excess moisture has been removed the film is hung up to dry. A dust free room is the most desirable. Miniature films should be dried quickly for prolonged drying favors the production of coarse grain. If an electric fan is available it should be utilized.

Another precaution necessary is that the film must not be subjected to changes in temperature while drying. Once it has started to dry in a room of a definite temperature it should not be removed to another room of a higher

temperature, so as to facilitate faster drying. When the film has started to dry at its edges and it is then subjected to a higher temperature, a shore line will form along the edge between the dry and wet portions of the film.

After it has dried thoroughly the film is cleaned with alcohol or carbon tetrachloride, using either absorbent cotton, or a chamois which has been soaked in the cleaning fluid. It is now ready for printing.

Carbon tetrachloride is an ideal cleaning agent for it is an excellent grease solvent. This chemical can be obtained from your photographic dealer, or at any drug store under such trade names as Fabricean, or Carbona.

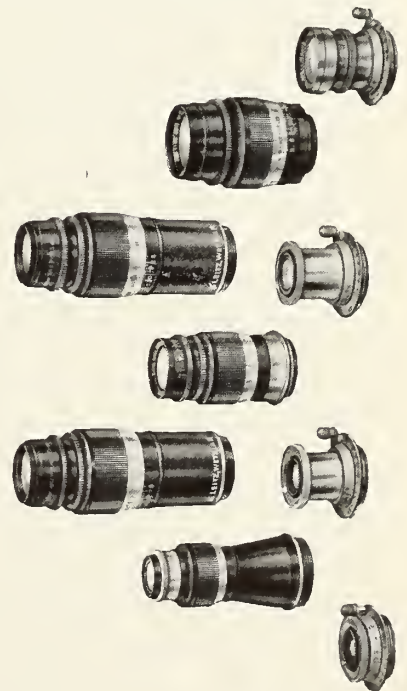
New additions to the Leica lenses: Two relatively new lenses are now supplied for the Leica camera, the Summar f:2 of 50mm. focus and the Hektor f:4.5 of 135mm. focal length.

The Summar serves as an ideal speed lens. Its focal length of 50mm. allows it to serve as a universal objective for the Leica, and its speed of f:2 opens up many new fields to the photographer. The correction is perfect. An image of wire sharp crispness is obtained to the very corners of the negative even when the lens is used at full aperture.

It may seem odd that the Hektor 135mm. lens has been added to battery of lenses available for the Leica since an Elmar 135mm. lens has been supplied. The Elmar serves for all general uses. The new Hektor objective is however ideally suited to cases where correct technical detail must be preserved. It also possesses a more superior chromatic correction than the Elmar, and is therefore more suited to color work and infra red photography.

Leica users can also avail themselves of Hektor f:2.5 50mm. lens in a collapsible mount which serves as a universal objective, as well as a speed lens. The Summar however possesses superior characteristics. Owners of the Leica camera as well as other miniature cameras can ob-

Showing
Various
Objectives
of Leica
Cameras



tain a new interesting booklet on lenses by writing to the E. Leitz Inc., 60 East 10th St., New York, N. Y. This booklet is supplied free of charge and contains many interesting lens facts presented in a novel manner.

Notes on fine grain developers: New fine-grain developing formulas are constantly appearing. From time to time such formulas will be published in this column. It would not be amiss for the miniature camera worker to experiment with the various formulas given in this department.

(Turn to Page 21)



STORY OF PHOTOGRAPHY IN BRIEF OUTLINE

By LEWIS W. PHYSIOC, *Technical Editor International Photographer*

[Rewritten from the S. M. P. E. Journal by the Author for the Souvenir of International Photographers of the Motion Picture Industries, October, 1932.]

THE conceptions of the world's more modern discoveries and inventions have been clearly disclosed through the various national patent offices and technical journals. The origin of some of the ancient ideas, however, are veiled in the romantic mists of speculation. They involve such picturesque matter as to furnish ideal subjects for poetic imagination.

Pretty tales are told of Newton day-dreaming beneath the apple tree and being aroused from his reveries by the thump of a falling apple, which natural occurrence suggested the theory of that mysterious force we call gravitation. We have been given a picture of young Watts sprawled before the hearth watching the lively antics of the top of the tea kettle under the pressure of steam. And also we are told of Archimedes' boast: "Give me a stick long enough and a place to stand upon and I'll move the earth."

In tracing the origin of the art of photography we must go back to the anciently observed phenomenon of the *Camera Obscura* and our fancy pictures old Alhazen, the Arabian philosopher, about the year 1000 A. D. There he lay upon his easy couch—late abed—after a long nocturnal session over some problem. His chamber was deeply curtailed by the solicitous members of his harem, that his repose might not be broken by the approach of day.

When he finally awoke he saw a ray of light entering a chink in the shutter of his window and where the light struck the wall there appeared a vision of what was taking place outside. Camels passed to and fro attended by white robed men and "women in gay colors."

The picture was reproduced, there upon Alhazen's wall, with startling realism. And strange to observe, the picture was reversed—a peculiar trick of the laws of optics.

Thus may we account for the first principle of photography, i.e., the *Camera Obscura*. Succeeding students developed the idea, first devising toys and then more useful applications for tracing pictures. It is said that the scholarly Leonardo da Vinci used the device to work out the principles of perspective.

Imitating Nature

The art of photography combines other branches of the sciences besides the simple phenomenon of the camera obscura, particularly chemistry, to say nothing of clever individual manipulation. But the great moving force back of the development of photography was that great desire, inherent in man from the time of his conscious awakening, to imitate the beautiful in nature.

It was this love of pictorial reproduction that inspired some spirit with the desire to *fix that fleeting image of the camera obscura*. Thus we find the chemists contributing to the solution of the fascinating problem.

It had been observed from time immemorial that the action of light affected the tone and color of various substances. Most significant was the discovery, by W. K. Shiele, that silver chloride became darkened when exposed to sunlight. Images in tracery and silhouette were beautifully reproduced by interposing the articles between the light and the silver chloride. But, alas! the same light that produced those images destroyed them so that they

were as fleeting as the effects of the camera obscura.

French First to Fix Image

A young Frenchman named Niepce strayed somewhat from the suggestion of Shiele's and combined a little mechanics with his chemistry and "fixed the image" by spreading a mixture of oil of lavender and asphaltum on a metal plate and exposing it for *several hours* in the camera obscura. The parts exposed to the light became insoluble and the parts unexposed were dissolved away with a mixture of oil of lavender and petroleum. The metal was then etched, furnishing a plate from which prints could be struck. This process represents not only the first successful attempt to fix the image of the camera obscura, but probably was the first suggestion of the art of photo-engraving.

The Daguerreotype

A scene painter named Daguerre became interested about the same time of Niepce's experiments. He became so smitten with the idea that he neglected his scene painting business and his wife became uneasy about his sanity and had him secretly observed.

Daguerre was obsessed with the silver idea, but his experiments were discouraging. However, he was earnest and honest enough to admit failure and he called upon his rival, Niepce, for help and they formed a partnership in 1829. They disputed each other's ideas, but Daguerre insisted that Shiele's silver stunt was the real foundation.

Accident came to Daguerre's aid. In a closet where he had stored away some of his faint imaged failures, a bottle of mercury had been spilt and the fumes of the mercury attacked one of the plates and intensified the delicate image.

Thus we have the suggestion of the first real photographic process; i.e., *a silver plate iodized in a manner to form a thin coating of silver iodide, exposed in the camera obscura to form a faint image and developed by the fumes of mercury.*

The Talbot Calotype

Another period in the development of photography was pointed off by Fox Talbot, a contemporary of Daguerre and Niepce. Talbot used paper instead of the metal support and by waxing the paper negative, to make it more translucent, could produce prints.

Talbot's process was important for it appears to be the first practical suggestion for the modern idea of a negative from which many positives could be secured.

However, as close to the solution of the beautiful problem as were those experiments, they had no practical value because there was no known way to make the silver image permanent. They could be viewed only in subdued light and eventually turned dark all over.

Hypo: (odium Thiosulfate or—Hyposulfite)

In the discovery of *Hypo* our story of photography is given a dramatic mood.

It was necessary to find a solvent which would dissolve only the *unexposed* portions of the picture and not affect the *exposed* parts. Many solvents were tried but all impaired the image. In 1819, Sir John Herschel was accredited with discovering that hypo would dissolve the silver chloride without attacking the free silver which formed the picture. However, it was not until 1837 that

J. B. Reade actually applied it to photographic experiments.

The remarkable feature of this important agent, Hypo, is that all through the various stages of the development of photography Hypo has held a peculiar position, uninfluenced by, and independent of, the most modern developments. It is interesting to observe that in proportion to the volume of other elements in the process it is required in the greatest quantity of them all. But if its cost had remained at "half a crown an ounce," as at the time of Read's experiments, the cost of photography would be prohibitive. Fortunately, industrial chemistry and nature's bounty provide it today as one of the cheapest ingredients.

The Wet Plate

Despite the popularity of the Daguerreotype and the improved Talbot idea, students continued to experiment. La Gray suggested a glass support and collodion in which to suspend the silver salt. In 1848 F. Scott Archer, acting on La Gray's suggestions introduced the first real photo emulsion, i.e., the wet plate, so called because it was necessary to expose it wet, due to the salt crystalizing if allowed to dry. Despite this disadvantage the wet plate produced results excelled only in some of the most modern developments.

The Dry Plate

The wet plate restricted the process to well defined limits—individual skill in manipulation; photographing only still objects and the limits of portability.

Dr. R. L. Maddox found that gelatine entered into a peculiar combination with silver salt so as to allow the emulsion to dry without crystalization. This combination has been one of the most interesting features of the commercial development. The so-called cooking and ripening under varying temperatures greatly influences the speed of exposures. This together with the adoption of celluloid as a base, has made possible two great commercial departments, the amateur hobby and the motion pictures.

The Panchromatic Emulsion

In 1801 Johann Wilhelm Ritter demonstrated that violet rays were apparently the more active agents in photography. Subsequent experiments confirmed the opinion that photography, at its best, was a judicious balance between blue objects that showed too bright and red ones that "came out" too dark. The next step was to develop an emulsion that would render all the colors in their proper tonal values. Modern research has found the means for modifying the gelatine emulsion by the introduction of particular elements that increase the sensitivity over those troublesome portions of the spectrum, particularly the reds.

The panchromatic emulsion has likewise made possible all the known color processes.

Reversal Process

The growing popularity of the 16mm. pictures has suggested the reversal process, or direct positive, designed to reduce the cost of amateur cinematography. It involves the use of certain chemicals that attacks the silver image but do not affect the unexposed compound. These chemicals suggest a final reference to hypo which acts only on the free silver, as before explained. These peculiar characteristics inspire the utmost reverence for nature's resources and the marvelous co-ordination of the elements in chemistry—all for the benefit of man's industry.

In conclusion, let us summarize some of the salient points in the development of photography:

- (2) **FIXING THE IMAGE:** by Niepce about 1825.
- (3) **THE DAGUERRETYPE:** first commercial photographic process.
- (4) **TALBOT CALOTYPE:** contemporary with Niepce and Daguerre, and the first negative and positive experiments.
- (5) **HYPO:** its properties noticed by Herschel and applied by J. B. Reade, in 1837.
- (6) **WET PLATE:** by F. Scott Archer, 1848; development of latent image with pyrogallie acid.
- (7) **DRY PLATE:** gelatine emulsion introduced by Dr. R. L. Maddox; snap shot exposures.
- (8) **ADOPTION OF CELLULOID BASE:** Eastman Kodak Co. in 1889; roll films for amateurs and motion pictures.
- (9) **PANCHROMATIC EMULSION:** rendering most of the colors in their proper tones; first adopted for motion pictures about 1924(?)
- (10) **REVERSAL PROCESS:** used in making autochrome plates and direct positions.

Comparative Speed

Niepce's asphaltum process.....	8 hours exposure
Daguerreotype	1 hour exposure
Talbot's Calotype.....	3 minutes exposure
Collodion Wet Plate.....	10 seconds exposure
Early Gelatine Emulsion.....	1/15th second exposure
Modern Pan Emulsion.....	1/55th second exposure
Above under similar light conditions at stop f/16	

HAIL THE NEW SUMMAR LENS



THE long-promised Summar f:2 50 mm. lens in collapsible mount for Leica Cameras is now ready for delivery. This lens embodies several really astonishing characteristics, among which might be mentioned its superb color correction and absolute crisp-sharpness, even at its widest aperture. A perfectly flat and brilliant field is produced. The outstanding feature of the Summar lens is its sharpness at *every diaphragm stop*. It is therefore, an ideal all-purpose lens, besides being an excellent speed lens. Because it is based on an entirely new optical principle, it does not suffer from aberrations which are usually associated with speed lenses, among which softness at large apertures is a disturbing factor.

The new Summar in collapsible mount differs somewhat from the standard Elmar and Hektor 50 mm. lenses for the Leica. First, the depth of focus collar is seen from above the camera, making it easily read without turning the camera around. Second, the lens itself does not rotate as the lens is focused. A spiral focusing mount causes the lens proper to glide forward and backward without turning. Third, the diaphragm control ring is situated near the front of the lens with the figures facing upward so that they may be read from above as the camera is held in the hands. Fourth, the Summar collapses to within three-quarters of an inch from the front of the camera, making it possible to carry the camera in the pocket or carrying case without the inconvenience of a rigidly projecting lens.

Those who have already secured the Summar are actually loud in their praises of it. It is hailed as the finest lens of its kind and type, and all tests made so far bear this out. The Summar F:2, 50 mm. lens may be obtained in both rigid and collapsible mounting. For further details, write to E. Leitz, Inc., 60 East 10th Street, New York City.

YOU'LL HAVE TO HURRY!

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Please mention The International Photographer when corresponding with advertisers.

- (1) **THE CAMERA OBSCURA:** anciently observed by Alhazen, Arabian philosopher in A. D. 1000; first applied by Baptista Porta; miniscus lens added by W. H. Wallaston in 1812.



A TEMPERATURE CONTROLLED PORTABLE LABORATORY

By PAUL R. HARMER



TTACHED hereto are the original drawings for a temperature controlled portable laboratory which was designed primarily for use in the tropics, but I have altered my previous plans and it is now adaptable to any climate in the world and is little affected by room or outside temperature.

Its only requirement is a small flow of running water and enough electricity to operate the motor on the ice machine.

Figures 1, 2 and 3 show the plan or layout of the tanks; figures 4, 5 and 6 are elevations of the same; the other drawings are details and accessories.

With everything in readiness the estimated time for the following is:

	Time
2000 ft. negative, 200 ft. per 10 minutes -	1 hr. 40 min.
2000 ft. sound track, 200 ft. per 5 minutes -	50 min.
4000 ft. positive, 200 ft. per 5 minutes - - -	1 hr. 40 min.

Total time - - - - - 3 hr. 10 min.

Working an eight or twelve hour day, the capacity of the equipment is quite all right for most companies, even to getting out dailies, so the picture can be rough cut before returning to the studio, thereby giving satisfaction for all concerned.

An experienced operator should be able to turn out film which would compare in quality with that of any commercial laboratory.

The essential parts of the equipment are as follows:

General Electric Condensing Unit (ice machine) model CM-6-W equipped with a one-horsepower motor and water cooled coils.

This insures a temperature drop of 20 degrees in the tap water; for instance, if the available water is 85 degrees at the tap, the machine is capable of delivering 60 gallons of water an hour at 65 degrees and the water cooled coil is the sure way to keep the condenser cool. The next item is the heating element which is necessary at times and is capable of raising the water temperature 20 degrees—from 45 to 65, which will take care of most conditions. This is a General Electric Calrod No. 133-W53, 3000 watts.

Both of these are connected to and controlled by a thermostat placed in the flow inside the regulator tank. Two satisfactory thermostats have been tried: the Bristol Model 177 and the Mercoid, with a 50-80 degree range, with a special helical bulb. This instrument is set to a plus or minus of one-half of one degree. Its control is so sensitive and accurate that a three-day test proved the total variation in the center of the developer was two-tenths of one degree. This thermostat and its relay operate through a double throw, three-pole switch which reverses the thermostat and all you have to do is turn on the electricity and let it take care of the temperature.

The principle of keeping the solutions at a constant temperature is one of transmission. The Monel metal developer tank and Monel metal hypo tank are surrounded on the sides and the bottom by running water at 65 degrees Fahrenheit. Good insulation from outside

temperature is obtained by using tanks made of 1¾ inch Oregon pine and insulated by two inches of cork board, waterproofed for this purpose.

Hinged lids are useful to assist in reducing loss of temperature, but most operators would find them in the way and unless the room temperature was interfering with the operation they could be dispensed with.

Beginning at the tap, we will follow the water through the laboratory. The first place it comes to is the weir box, with its float, which regulates the flow of water. Figures 1, 4 and 9 illustrate the location and purpose; a one-eighth inch slot in the weir and 1.91 of an inch high will flow exactly 60 gallons an hour, by gravity; the principle of the float is to maintain this height and thus eliminate adjustments, due to variable pressure in the water main.

The water then flows through the temperature regulator and into the square tank surrounding the developer. It flows diagonally across to a pipe which carries it to the square tank surrounding the hypo. It again flows diagonally to the other side where it enters another pipe which carries it to the far corner of the clean wash. Here it starts back. When it leaves this tank it enters its first underfeed-overflow pipe, as illustrated in Figure 10; the chemicals, being heavier than the water, settle to the lower part of the tank and the underfeed draws them off as fast they accumulate.

Next, the water flows to the rough wash, then through another underfeed-overflow pipe to the rinse tank, which is another square tank made of Monel metal and resting on a grid, to allow its chilling effect to the compartment below. The water circulates across this tank and into the outlet to the accessories which we will take up later.

Figure 11 shows how a Monel metal pipe is flanged to the wooden tank, then the threaded nipple on the round Monel tank is screwed down into this pipe, thereby making it possible to get a water-tight connection and still have it so the tank can be removed if required. A rubber stopper can be used instead of the gate valve illustrated if desired. One thing should be mentioned regarding these Monel tanks: They should be made of 16 gauge Monel plate, with welded seams, for a first class job, also an apron should be fitted around the sides of the top, in order that the water is not polluted by slopping developer or hypo into the circulating system.

Wooden lugs laid in the direction of the flowing water keep the Monel tanks and film racks from resting on the bottom, also allowing the chemical to settle to the bottom of the wash tanks and be quickly carried away.

The developer tank and the hypo tank are 24 inches in diameter and 15 inches deep, with a maximum capacity of 29 gallons; the rinse and wash tanks are 24 inches by 24 inches by five inches deep, but as the water level is maintained two inches down this gives them the capacity of five gallons each, which maintains a complete change of water every five minutes in each tank.

We are now ready to consider the type of film developing reel or rack. Stineman's developing reel, 200 foot length, is satisfactory and when one becomes ac-

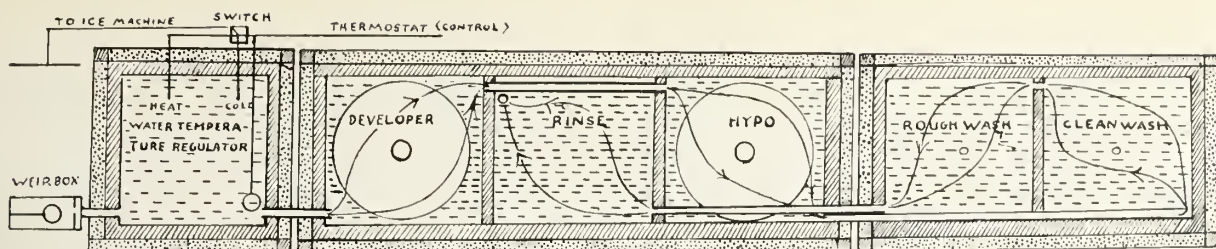


FIGURE 1

FIGURE 2

FIGURE 3

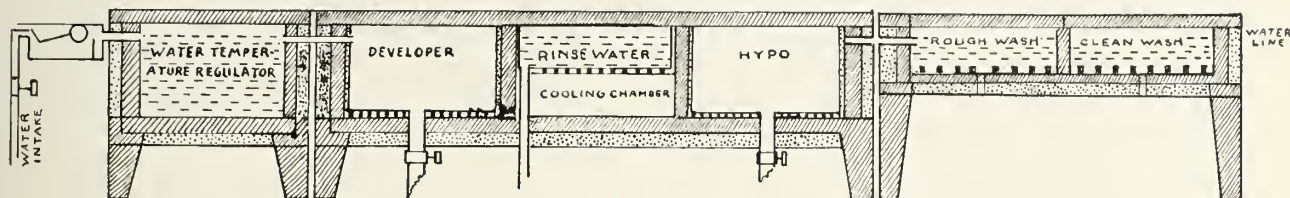


FIGURE 4

FIGURE 5

FIGURE 6



FIGURE 8

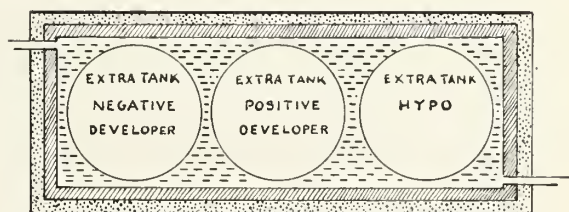


FIGURE 7

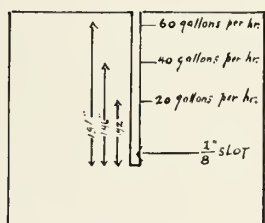


FIGURE 9

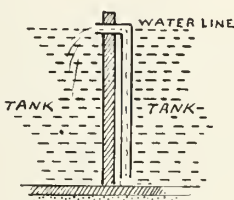


FIGURE 10

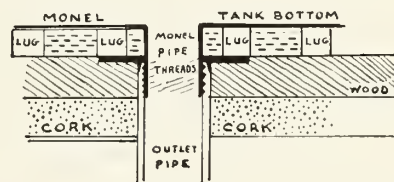


FIGURE 11

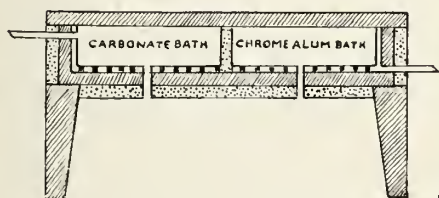


FIGURE 13

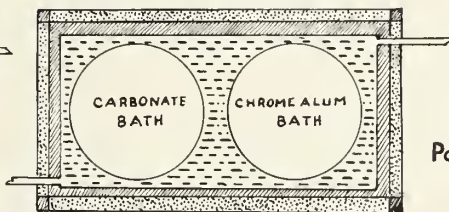


FIGURE 12

HOLLYWOOD, CALIFORNIA
DECEMBER 21ST, 1933
PORTABLE, TEMPERATURE CONTROLLED
LABORATORY
Paul R. Harmer

customed to them they can be relied upon to hold the film perfectly. There are other systems and methods which might be adaptable to this tank system.

Regardless of the make, it is necessary to bring the film and the rack to the same temperature as the developer, otherwise streaks are sure to give you grief. The film and the rack always take on the temperature of the room, then when they are immersed in the developer, development is accelerated or retarded where the rack touches the film; hence, place the rack and the film in the cooling chamber as the first step and so on through the process.

Figures 7 and 8 show an accessory, kept at a constant temperature by the waste water from the rinse, which is still right around 66 degrees. Some operators would rather carry a little concentrated solution for a booster. This can be kept in a bottle in a corner of one of the square tanks.

Figures 12 and 13 show another accessory. Some operators like the carbonate bath and some the chrome alum bath. This illustrates how it may be added or left

out as desired.

Now if we really want to use an old trick of the trade, after the running water has done all of this work and it yet is under 70 degrees, we can build a pre-cooler which brings the tap water within about two degrees of the refuse water by allowing the waste water to circulate around the intake pipe, which requires 98 feet of $\frac{1}{2}$ inch pipe per gallon in circulation. It takes a lot of pipe, but some people want it. Personally, I don't recommend it, because of clogging and the trouble it causes when it has been used a while.

Another trick that can be used is, for instance: The tap water has only to be raised or lowered ten degrees or less, so why not increase the water flow to 90 gallons an hour and get the benefit of faster washing for positive? However, with a simple wire rack, two Stineman reels can wash, one on top of the other in the same tank. In closing, I wish to thank W. L. Holladay, Refrigeration Engineer for the General Electric Company, and Percy Millard, Laboratory Expert, for their criticism and suggestions.

TELEVISION



THAT Don Lee television images may be received in any part of California was demonstrated in a series of experiments in Alameda, January 5th and 6th, when television images from the Don Lee television station W6XS at Los Angeles were shown to a group of San Francisco Bay district university professors and radio authorities by the engineers of the Don Lee Broadcasting System.

Not only were close-ups received, but outdoor scenes and boxing bouts from Paramount features and shorts were shown and identified.

Commenting upon the reception, Dr. Lester E. Reukema, professor of electrical engineering, at the University of California, Berkeley, said, regarding a close-up of a motion picture star:

"One could readily see the movement of her head, causing a slight waving of the pendant earrings she wore, and could see her lips move as she spoke. In the picture 'Madison Square Garden,' the bodies of the boxers in trunks could be clearly seen at times, also the footwork, striking of blows, the boxing gloves, dodging of blows, etc. Considering the distance covered, approximately 350 miles air-line, I was surprised that the fading was not more severe."

Corroborating his colleague, Instructor Leonard J. Black of the University of California, said:

"The features, at times, were very distinct. Detail was good. It was easy to notice such things as her ear-rings swinging and that she was talking."

The images were also witnessed by Frank C. Jones, prominent radio consultant, who designed the ultra-short-wave radio telephones now being used for communication in the construction of the San Francisco-Oakland Bay Bridge, and who spent several months in television testing and design work in Chicago. Mr. Jones said:

"Among the scenes were those of yell leaders in a stadium leading cheers for a rooting section. The action and pictures of the yell leaders were quite good. In a Paramount short of 'Over the Jumps,' I saw some scenes of small outboard motorboat races where the boats and the waves in the wake of the boats were quite good. The pictures were much better than I expected to view over such a distance."

In commenting upon the experimental work success-

fully concluded in Alameda last week, Harry R. Lubcke, director of television for the Don Lee Broadcasting System, said:

"This reception, as well as reports from many short-wave listeners who chance upon the signal and listen to the voice of announcers, establishes the fact that our television service is state-wide. It is available to anyone who will erect a good aerial and purchase or construct the necessary equipment."

Several receiving locations were tested. One, in the San Francisco business district, was characterized by low signal strength and interference from radio stations within the block. Another, on Twin Peaks, gave excellent images when first tested, but soon became worthless because of a "power leak." The first reception was made in rainy weather. As the location dried out, however, the power leak developed, making any type of radio reception impossible. A power leak is caused by defective insulators, pole line bonding, or other power equipment partially breaking down with a spark discharge, and is well known for its damaging effects on radio reception by amateurs and short wave listeners.

The Alameda location was in a typical residential section, and with a 125 foot antenna 45 feet high at its far end and sloping down to the chimney of a modern stucco bungalow gave excellent signals over the total time tested. Based on that location, any antenna 75 feet or more long and 35 feet or more high will give sufficiently strong signals for good television reception at a distance of 350 miles from the transmitter.

A test with the same equipment on the same images, at a distance of $3\frac{1}{2}$ miles from the Los Angeles transmitter showed that the images at 350 miles are of as good quality as those received locally, which was surprising. Of course, fading caused the distant image to grow dim periodically, but the comparative infrequency of this phenomena brought forth comment from Dr. Reukema, as given above, who spoke for the whole group in this respect.

The Don Lee Stations, W6XS, 2800 kilocycles (107 meters), and W6XAO, 44,500 kilocycles ($6\frac{3}{4}$ meters), broadcast full length Paramount feature pictures, Paramount shorts and Pathe Newsreels each evening except Sunday, from 7 to 9 o'clock, and on Mondays, Wednesdays, and Fridays from 9 to 11 a. m.

Instructions for the construction of a television receiver can be secured by sending a stamped, self-addressed envelope to the Television Department of the Don Lee Broadcasting System, Los Angeles.

A WEE BIT O' FILM

Laura Oakley Moore

A wee bit of film, so sensitive and shy,
Was exposed one day to the camera's eye.
The camera smirked in a style not new
And said: "My dear, I can see through you."

So he winks his shutter
And he grinds his wheels,
And he purrs and purrs
'Till the poor film reels.

She, never having been exposed before,
Turned dark with horror and began to deplore
The fate of a maid so sensitive and shy
Who could be exposed to anyone's eye.

When, plop! into a bath she fell,
And squirmed and wriggled and then—oh, well,
Out she came all sparkling and bright
In colors so gay she was quite a delight.

She glanced around seeking some protector,
Then leaped to the arms of the film projector.
There she turned in the light so clear,
Never once thinking of the camera's leer
Or the things he said as he winked his eye
At the timorous maid so sensitive and shy.

For now she shines, of the films a queen,
Fully developed for the silver screen.

The Basis of a Satisfactory Working Agreement . . .

**A Good Cameraman –
Eastman Supersensitive
Panchromatic Negative**



J. E. BRULATOUR, Inc.

New York

Chicago

Hollywood

HOLLYWOOD STUDIOS OF THE EARLY DAYS

By W. WALLACE CLENDENIN
(Pinch Hitting This Month for Earl Theisen)

BIOPHOTOGRAPH produced pictures in Los Angeles in 1906, it being the first company to do so, but it did not at that time build a studio. This honor goes to William N. Selig, who, in 1909, built the first moving picture studio on the Pacific coast. This was at the northeast corner of Clifford and Allesandro streets (this portion of Allesandro has since become a part of Glendale boulevard) in Edendale. Selig had faith in the



The Biograph Studios were built at Girard and Georgia Streets, 1911.

future of the film industry and proved it by building a complete studio from the ground up—stucco buildings, a stucco wall around the property and most remarkable of all, a glass enclosed stage.

Closely following Selig came the Bison Company. Their studio, three blocks south of the Selig lot, was of the type that became the standard locally for many years—flimsy frame buildings and an open air stage with muslin diffusers overhead to soften the rays of the sun. After Thomas H. Ince began producing at Santa Monica, the Edendale plant was left to Mack Sennett and his Keystone Company. Sennett remained there as long as the studio was in use; when he moved out the buildings were torn down, the only one still standing being the original concrete light stage.

The third company to come to Edendale was Pathe; producing westerns exclusively, their lot was a block south of Selig. Production there was discontinued in 1914; no trace of the studio now exists.

The Norbig studio was erected by Norton and Biggy in 1913 on the west side of Allesandro near Aaron street. It is still in use. Maintained as a rental proposition it was at one time used by Hal Roach making the Harold Lloyd "Lonesome Luke" series.

The Essanay Company never attempted to establish a permanent studio in the Los Angeles area. The western Essanay unit headed by G. M. Anderson (Broncho Billy), left Chicago in the summer of 1910, and headed toward the coast. They made a few pictures in Colorado, near Denver, then came on to Los Angeles. They made one picture at Santa Monica and one or two in Hollywood, working in a temporary setup on the site afterward used by Kalem. The town of Niles, near San Francisco, was finally chosen by Anderson as the location for a permanent studio.

In the latter part of 1912, Thanhouser made a few pictures in Los Angeles, a studio being built by them on Fairview street in Boyle Heights. The most notable of their ensuing productions was a highly condensed version of "Carmen." When Thanhouser moved out about six months later, Majestic moved in and began turning out

pictures in considerable quantity. They later moved to the Fine Arts studio, but the Boyle Heights property was always afterward known as the "Old Majestic Studio."

In 1914, the newly formed Metro Company, headed by B. A. Rolfe (now of dance orchestra fame), followed Majestic. Louis Joseph Vance also used the studio for one picture, this being from his novel, "The Spanish Jade." Still later came Chaplin, making pictures for Essanay and again the studio was used for the filming another version of "Carmen", this being Chaplin's famous burlesque version.

After Chaplin, various smaller companies used the studio from time to time; it was finally destroyed by fire, there being nothing of it remaining now but the brick film vault and concrete stage foundations.

Kinemacolor started their Los Angeles activities in 1912 at the rear of a house at 4500 Sunset boulevard. Kinemacolor needed all the light they could get and for that reason shot all their interior sets by direct sunlight. Theirs was about as rudimentary a studio as ever existed—a house, a scene shed and a board stage floor. However, it was around this primitive beginning that the famous old Fine Arts lot was built up, from which came "The Birth of a Nation", "Intolerance", and many another fine production. Fine Arts had a dark stage for using artificial lighting, probably the first one in California.

Kalem opened a studio in Glendale in 1910, another one soon afterward in Santa Monica and one in Hollywood. George Melford and Alice Joyce were the leads for the Glendale unit; Ruth Roland and John Brennan made comedies in Santa Monica, while the Hollywood studio, after making an assortment of comedies under the



"The Code of Honor," 1909. Note queer painted canvas sets. No artificial light was used in those days. Left to right: Anna Dodge, Hobart Bosworth, Robert Leonard, Betty Harte.

direction of Marshall Neilan, finally settled down to the famous "Ham and Bud" series, featuring Lloyd Hamilton and Bud Duncan, with Ethel Teare as leading lady. In 1914 the Santa Monica lot was abandoned; two years later the Hollywood studio at 1425 Fleming St. was

closed and all work was done at the Glendale studio at the entrance to Sycamore Canyon. The Fleming St. lot was afterward used by Charles Ray.

Vitagraph came to the coast in 1911, and began studio work at the rear of a house on Ocean Avenue in Santa Monica. At first, instead of an open air stage, the company worked in a tent, a stage with diffusers being used later. After a few years production was begun at their Hollywood studio at the time they discontinued at Santa Monica.

In the latter part of 1914, a studio was built by the Climax Co. at the intersection of Romaine and Lillian Way, in Hollywood. One picture, "The Lone Star Rush" was produced, featuring Robert Frazer, Mae Gaston, and Charles Arling. Jack Holt was a member of the supporting cast. After Climax, the studio was used successively by Kolb and Dill, Chaplin, Metro, and Buster Keaton.

In 1913, the Zodiac Film Co. was formed, and were scheduled to begin the production of pictures on the property on the southwest corner of Hill and Council streets, over the Hill street tunnel. The Zodiac Co. had a rather brief existence, and Hobart Bosworth moved in, making his first production after leaving Selig to become an independent star. Beginning with "The Sea Wolf", he filmed several Jack London stories. In the years that followed, the studio was used by various companies—Rolin, headed by Hal Roach, with Harold Lloyd and Bebe Daniels; Chaplin, finishing out his Essanay contract, Mary Pickford, making her first version of "Tess of the Storm Country", and a number of smaller independent organizations. At the present time the lot is used as an auto park.

Lubin had a studio in 1913 at 4550 Pasadena Ave., which was later used by J. P. MacGowan's Signal Film Co. for the production of a series of railroad dramas featuring Helen Holmes.

In the period around 1914-15, studios were started and abandoned so rapidly that it was difficult to keep track of them. The Crown City Film Co. had a fairly large one in Pasadena, there was one in Alhambra, the Navajo Co. had one in Edendale where the Mixville market now stands, Jess Robbins had another out on Central Ave., Dave Horsley built a big one at Washington and Main on the old Chutes-Luna Park site, Milton H. Fahrney and George Ovey made MinA ("Made in America") comedies at Culver City, the Oz studio got under way at



David Horsley's first studio; northwest corner Gower and Sunset, now occupied by the Christies.

by the Christie Comedy Co.

Carl Laemmle started production by the newly formed Universal Co. in Hollywood, July 12, 1912, taking over the Nestor property and also half a block across the street on Sunset boulevard. With the opening of Universal City on March 15, 1915, the Hollywood Universal studio was left to the Stern brothers, producing L-Ko comedies. All buildings on the lot were destroyed several years ago by fire.

Wm. H. Clune built a studio in 1915, on Melrose avenue across from the present Paramount lot. Clune produced "Ramona," with Monroe Salisbury and Adda Gleason playing leads. Donald Crisp directed. The property has since been used by various directors and stars, one of whom was Douglas Fairbanks.

The first Ince Culver City studio was built in 1915. After Ince moved out it passed into the hands of the Triangle Co., who passed it on to Sam Goldwyn. It is now occupied by M-G-M.

Ince built his second Culver City plant in 1917. After his death, it was taken over by C. B. DeMille. It was afterward bought by Pathe, who in turn sold it to RKO, who now own it.

The original Lasky studio at the intersection of Selma and Vine, in Hollywood, was built in 1913. Most of the early studios started by buying a frame house and building a stage back of it, using the house as office and dressing rooms. The beginnings of the Lasky lot were even more humble; they started with a barn! A glass stage was added in 1914, this being the second one on the coast.

Thomas Dixon—author of "The Clansmen"—built a studio on Western Avenue in 1915 for the production of a war picture, "The Fall of a Nation." The property was later bought by the Fox Company who still hold it.

The studio at the corner of Council and Occidental streets was built in 1914 for Hobart Bosworth. Oliver Morosco had it for a while, after which it was used by Paramount for their Realart productions. It is now occupied by the Cinecolor laboratories.

The Balboa studio on Sixth street in Long Beach was started in 1913 by the Horkheimer brothers. During 1915 this was one of the busiest lots in the industry. In 1917 Balboa went out of business, and Fatty Arbuckle took over the plant, making most of his two reel Paramount comedies there.

Biograph built their first Los Angeles studio in 1910, at the corner of Washington and Grand. This was only a temporary structure, used for one season. In 1911 the studio at the corner of Georgia and Girard was built; during the next five years it was used as Biograph's winter headquarters. In the early part of 1917 it was occupied by Thomas H. Ince, pending construction of his second Culver City plant. The studio was last used in 1923 by Katherine MacDonald.

Other studios not thus far mentioned were those of the Quality Co. on Gordon street, E and R Jungle Film on

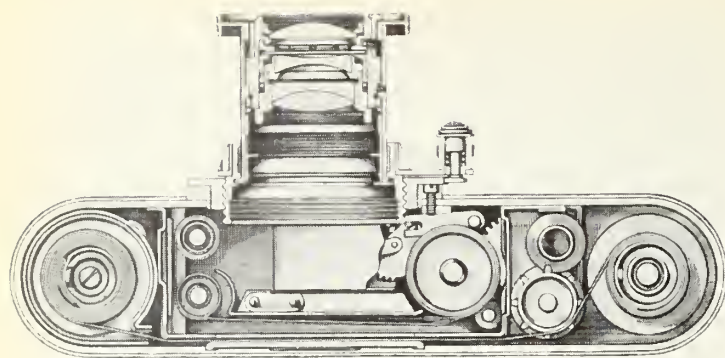
(Continued on Page 31)



First set built by Los Angeles Selig Co. Picture, "Ramona." Director, Francis Boggs.

the northwest corner of Santa Monica and Gower—and there were still others.

When Dave Horsley brought his Nestor Co. to the coast in October 1911, he built Hollywood's first studio. This was at the northwest corner of Sunset and Gower. Ford Sterling occupied it later, after leaving Keystone to become a Universal star. It was afterward used for years



E. Leitz, Wetzlar

Cross Section of the Leica Camera



O you really *know* your miniature camera? Do you know how it looks inside, and what "makes it go?" And do you make the most of the advantages your camera offers you? Few people do.

Let us for a few moments dwell on the camera itself. To most folks, a camera is merely a light-tight box, at one end of which is the lens, and at the other a receptacle for holding the sensitive material (plate or film). This is, of course, correct basically, but the miniature camera consists of far more than this.

It must be remembered that the miniature camera is to many more than merely a camera; it is an instrument of precision, and such it should be known as, for it is more than a picture-recorder in the usual sense of the word. Everyone should regard the baby camera as something more than just a camera, for when this attitude is accepted, a greater range of activities can be foreseen with the midget camera.

Many complain that the baby camera is priced far too high. This is true when we consider the average camera, but when we begin to understand what the tiny camera is made of, we can no longer regard it as being expensive. An examination of the accompanying illustrations will reveal the complex mechanism of the Leica camera, which can be used as a representative. It will be seen that the tiny camera body is crowded with a maze of gears, springs, rollers, and whatnots. Some of the parts are extremely tiny, as can be understood, and in order that they operate year after year with the greatest of accuracy, they must be made with ever-so-much care and from the finest possible materials. Some of the cost goes here. Each part, large or small, must fit exactly. Tolerances are not permitted. After the numerous parts have been made, they must be assembled and crowded into the limited space provided in the camera body.

To give you some idea as to how carefully everything in the camera is checked, let's take the shutter as an example. All shutters are notoriously faulty when it comes to clicking the exposure-intervals. For example, if the shutter is set to produce an exposure of $1/100$ th second, does it actually give that exposure? Nine shutters out of ten will not hit the $1/100$ th interval exactly—they may run to from $1/80$ th to $1/125$ th, but for all you and I know, or care, the exposure is $1/100$ th. Thanks to the tremendous latitude offered by our modern emulsions, slight discrepancies such as these are unimportant. In fact even if the shutter is considerably off, we would still be unable to notice any difference in the resultant negative. So we promptly forget our errors. And this does not mean any one particular type or make of shutter either; all of them will very often be found wanting when it comes to exactness.

As has been mentioned, slight errors in shutter speeds can safely be ignored, yet the focal plane shutter of the

UNDERSTANDING THE MINIATURE CAMERA

By KARL A. BARLEBEN, JR., F.R.P.S.

Leica must be checked carefully before it leaves the factory. A tester sits before a stroboscope all day long, snapping shutter speeds and seeing to it that when he sets the shutter for $1/500$ th second, the characteristic curve is seen through the aperture as the shutter snaps past. Should the curve not be just right, the camera is sent back for a new adjustment. In this way, the shutter speeds may be regarded as being accurate when the camera is purchased.

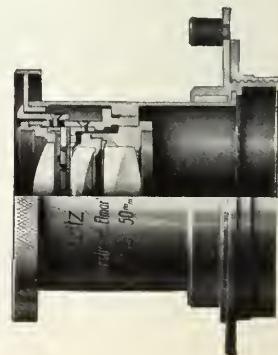
In time, with wear and use, the speeds may shift slightly, in which event another checking with the aid of a stroboscope will easily remedy the defect. That is something else you pay for when you buy a precision camera.

When it comes to lenses, we cannot help but admit that most of our money goes into the optics. Only lenses of the finest type are considered for use on miniature cameras. Not only that, but the lenses are mounted in interchangeable mounts with the aid of a microscope. No slip-shod methods here. In bigger cameras where focusing is done by means of a ground-glass, the lens can be attached to the camera practically anywhere out front. It can be always focused visually with the ground-glass. But such is not the case with the miniature camera. The lenses are in themselves jewels of the finest glass, and it would indeed be a pity were they carelessly attached to the camera.

It will be seen, then, that the miniature camera is not really expensive when you consider the care that is taken in its manufacture. But aside from this, there are other factors which must be reckoned with. Consider the small size and convenience afforded. Think of the economy of operation. Appreciate the countless advantages afforded. Isn't it worth while to spend a bit more on the initial purchase and save in operation? Or would you prefer to buy a less expensive camera and be burdened with large operating bills forever after?

Not that the miniature camera will ever entirely replace the larger and more conventional types of cameras, but that it should be accorded its due share of credit in the fields of photography. Already its influence has been felt in practically every phase of photography. During the "depression years" it has been a decided boon to all photographers, particularly the amateurs who would have had to give up photography as a hobby were it not for the great saving effected by the use of the baby camera. In many cases some of these amateurs lost their positions in the business world. What to do? Those who were wise enough to thoroughly master their equipment saw possibilities in it, and lo and behold, many of these now are

Cross Section
of the
50 mm. Lens



now in business for themselves—and making more money with their miniature camera than they did formerly in the office. Many interesting stories will in time come to light regarding this, and when they do, you will find the miniature camera in the background.

The midget camera, while not a newcomer as many people believe, became popular only a few years ago. It descended upon us with a swiftness that was nothing short of miraculous. That it took the country by storm need not be mentioned—everyone knows that. But from the time of its “introduction” to the present, we haven’t had much of a chance to completely understand the little stranger. There are loads of things to be tried and tested. Miniature camera clubs and individuals are working furiously with developers, fine-grain, and other problems. Naturally this all takes time. Right now there is not a great deal that we can look upon in miniature photography as settled or final. Next week someone is bound to come forth with a new theory or a new method, and our present routine becomes obsolete.

The serious worker gets a big kick out of it all, however, for this very uncertainty of it all provides something new to work with and try almost constantly. Miniature photography cannot at this time be labeled a cut and dried proposition like the more orthodox forms of photography.

More can be done with the higher-priced miniature camera than with any other type of camera. The results are just as good, if not better, and the operating costs are ridiculously low. Imagine doing aero, stereo, micro, candid, portrait, pictorial, panorama, clinical, copy, sport, and night photography with but one camera! The miniature camera does them all by merely using a lens or device designed for the particular work at hand. The several cameras which make use of standard 35 mm. motion picture film have in this respect a tremendous advantage of the roll film cameras.

Many enthusiasts feel that because a battery of lenses is available for the miniature camera, they have to have them all. This is nonsense. Some of the most successful workers use but one lens, usually the so-called “standard” lens of two inch focal length. The other lenses have their purpose of course, and sometimes, in certain types of work, one or more will be demanded, but he who knows his one lens can do wonders with it. It is amazing how few amateurs really know how to handle their lens equipment. So many things can be done with the focus, depth of field,

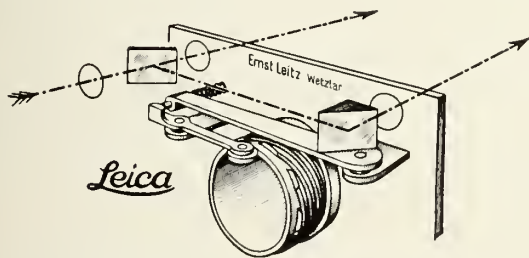
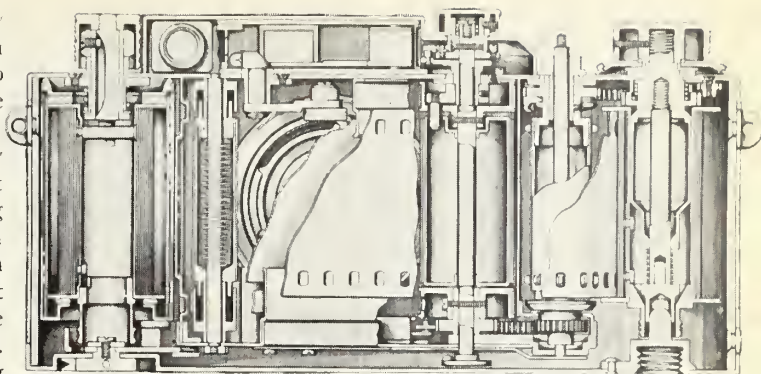


Diagram showing how the Automatic Focusing Range-Finder operates.

and diaphragm stops that it is a shame that better use is not made of them. The worker limited to his one lens by no means feels handicapped if he knows and understands it. On the other hand, other workers possessing several different lenses cannot turn out a single good photograph, no matter how they try. They simply haven’t thought it necessary to study their equipment a bit. The man who understands his camera is the one who produces consistently good results. This should be a strong hint for many of you who have so far failed to turn out satisfactory results.

There is considerable literature now available from which the ambitious worker can secure additional informa-



E. Leitz, Wetzlar

Looking down into the mechanism of the Leica Camera.

tion about his equipment and miniature photography in general. Books include *The Leica Handbook*, *The Leica*



H. D. McCarty using his Cine Kodak Special on the races. Shooting pictures from a speed-boat is no cinch. When it comes to action shots the miniature camera is right there with the goods. The Elmar 135 mm. focus lens, stopped to f:4.5 with a shutter speed of only 1/200th second produced this result on Eastman Panatomic film. Photos by A. A. Chapman.

Data Book, *The Book of the Miniature Camera*, *The Miniature Negative*, *Its Development and Care*, and *Modern Photography With Modern Miniature Cameras*. More titles are constantly appearing, so the old excuse of not being able to find information no longer holds good.

The fact that enlarging must usually be resorted to when using the miniature camera is a decided advantage. Projection printing is today considered the standard method of making prints, regardless of the size of the negative. Enlarging permits dodging, trimming, blocking and shading, to say nothing of altering the shape and size of the picture—all without damaging the negative. Detail and atmosphere can be secured by means of the enlarger which would be utterly out of the question in a contact print. Thus the process of enlarging is an advantage, and should not be regarded as a drudge proposition belonging only to miniature photography.

Come to understand the baby camera. Study it. Experiment with it. Read up on the subject in books and magazines (including *THE INTERNATIONAL PHOTOGRAPHER*). You will very likely be amazed at the progress you make as time goes on. If you now are “luke-warm” on the subject of the miniature camera, you will soon realize that you can never again do without it.

The International Photographer

was the first publication in its field to reduce its subscription rate.

Eventually the Creative Efforts of All Concerned in Motion Picture Production Must Be Interpreted by the Cameraman.

THE CAMERAMAN

Vol. I.

MONTHLY NEWS OF PRODUCTION

STILL CAMERAMEN

Just how important is the "still" cameraman to the motion picture industry?

Jack Freulich, head of the still department of Universal Pictures, is qualified to answer that question, he having been connected with the motion picture business for more than fifteen years.

"A still man is of more importance to the motion picture industry than most people figure," he says. "Stills are the direct selling factor of the picture. They are used as advertising 'come-on' in the lobby of the theatre; good stills will pack a house, that is if they are arranged to attract attention. In most of our larger cities a great per cent of the people go 'lobby shopping' and an unattractive still display in the lobby tends to keep them away from the box office."

The man who shoots stills must know his business; he must know what sort of pictures to make to attract attention.

"A good photographer will read the script of the picture, get to know the director, cameraman and all the principal actors in the cast, gain their confidence; in this way he will obtain the best possible action and expression," he claims. "The director is the man a good still man will contact; he is the boss of the set and will aid in the changing of lights so as to obtain best results."

The use of stills taken of sets and stars is unlimited, they are used in trade journals, movie magazines, newspapers, department store advertising and in the selling of the picture itself.

"Every actor or actress knows that stills are of the utmost importance to their careers, and will usually aid in every way, a still man they know and trust," he says. "If a man goes about taking stills in a haphazard manner he will soon lose the confidence of the people with whom he works."

Universal has a still "morgue" dating back a good many years, each new set erected on the lot is photographed several times and filed away for future reference. This is very important in case retakes have to be taken. The still will show the correct position of furniture, pictures, drapes or other articles of decoration.

"Hollywood is the creation center for fashions in the United States," he says. "We receive requests from every state in the Union asking for pictures of new styles used in the making of pictures, interior layouts of sets showing the arrangement of furniture, drapes and even the entire inside of a home. These come mostly from department stores, furniture factories, interior decorators and many other sources of manufactures."

Portraits of the stars and feature players are another type of still. They are used in many ways, fan magazines, newspaper cuts, jewelry advertising, cosmetic, shoes, hats, stocking and many fabric manufacturers use them for window display. The portraits of the stars are sent also in answer to fan requests for photographs.

"Interior decorators follow the motion pictures very closely for new ideas," he says. "The fact that motion picture companies employ men who specialize in the making of new creations in furniture, drapes and other household goods, causes a constant demand for stills from these decorators."

"The publicity department, a very important cog in the motion picture industry, uses thousands of these stills for mailing lists to theatrical managers and newspapers; it is their medium of building up a new picture," he stated. "This is one man the movies can not do without—the still cameraman."

METRO-GOLDWYN-MAYER

With a cast like Clark Gable, Myrna Loy, Jean Hersholt, Henry B. Walthall and several other of the good ones—and with George Folsey at the camera, "Men in White" should be anything but disappointing.

FOX

S. Halprin is in New York shooting process shots for John Blystone's next.

Hal Mohr finished Will Rogers' picture, "David Harum," and is preparing for the next Blystone picture.

Johnnie Seitz is photographing "All Men Are Enemies," under the direction of George Fitzmaurice.

G. Schneiderman has just finished George White's "Scandals," and is getting set for John Ford's next picture.

Barney McGill is photographing Lou King's picture, "Murder in Trinidad," at the Western Avenue plant.

Ernie Palmer has just finished the "Follies."

L. W. O'Connell has finished the "Follies" and is preparing for Jimmie Flood's picture, "Old Thursday."

Joe Valentine is photographing James Tinling's picture, "Three on a Honeymoon."

Eddie Hammeras and J. O. Taylor are processing.

Art Miller is in charge of the cameras on the musical, "Bottoms Up." Harry Jackson's radio orchestra will be used in the recording.

PARAMOUNT

Gordon and Dev Jennings, the magicians of Paramount, are up to their eyes in trick stuff for current production. The work of these clever artists is one of the strong box-office influences of Paramount.

Alfred Gilks' camera work on "Miss Fane's Baby Is Stolen" is pronounced excellent by eastern critics. It features Alice Brady, Dorothea Wieck, Baby LeRoy, etc., and is directed by Alexander Hall. It is a Paramount.

Hal McAlpin has started "Man Who Broke His Heart," with William Cameron Menzies and George Somnes directing.

Cinematographer Henry Sharp has been assigned to "Melody in Spring," featuring our old radio friend, Lammy Ross.

Harry Fishbeck should not be overtaxed in "The Trumpet Blows," as the cast includes only three persons—George Raft, Adolph Menjou and Frances Drake.

When Milt Krasner produces his usual artistic lighting effects on "Baby in the Icebox," she probably will thaw a lot. A Charles R. Rogers production.

RKO

Merian Cooper is said to have announced that RKO will film Bulwer-Lytton's "Last Days of Pompeii," one of the greatest of all dramatic stories. Mr. Cooper is to be congratulated upon his courage and good judgment. The picture should be a tremendous success and the cameraman who shoots it will have one of the really big opportunities of cinema history.

Edward Cronjager is working on Jane Murfin's latest screen play, "Transient Love."

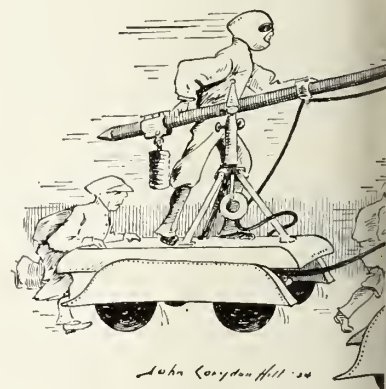
Harold Wenstrom directed the photography on Radio's "Lost Patrol."

COLUMBIA

Joe August has another crackerjack assignment in "Sisters Under the Skin," featuring Elissa Landi and Joseph Schildkraut.

Johnny Stumar seems to be getting the thrillers. After finishing "Murder at Rexford Arms," he proceeded to "Storm at Midnight" for Columbia.

The Cameragram is not in any sense to be confused with Brulatour Bulletin which, for the period of a year was published monthly by J. E. Brulatour, Inc. Distributors, Eastman Films, in co-operation with the International Photographer. Brulatour Bulletin was originated and designed by E. O. Blackburn, well known Hollywood sales representative for Brulatour, Inc.



IF THIS STREAMLINE SOMETHING LI

MISCELLANEOUS

Herbert Aller has purchased the screen of "Don't Be That Way" and is organizing like to produce it. Looks like one sure fire kind.

Hiroshi Horie writes the editor from Japan, that he has just published the first of the Leica Monthly Magazine. Mr. H. also president of Nippon Leica Club and president of the All-Japan Leica Society.

Victor Milner is dean of the cameramen Paramount-Publix lot.

Phil Tamura has met with great success as a cinematographer in England and he has a his success by a fine exhibition of courage and technical knowledge. Hollywood proud of him and so is England.

"Mysterious Mose" has nothing on Jar Shackleford. Our perpetual globe trotting like he did just before he went to the Desert and to Oceania. It won't be long we hear of Shack ordering 100,000 or more of film and pointing the prow of his ship to unknown destination. Shouldn't be surprised if Shack would discover a bit of the lost city of Atlantis some day.

George Robinson shot "Cross Country" for Universal production and release. Eddie Zell directed. Lew Ayers, June Knight, White, Alan Dinehart and others furnish action.

The host of friends of Ira Hoke who joined to hear that he is happily situated rancho at Grant's Pass and is not worrying cameras and such like. Ira is a credit to

RAGRAM

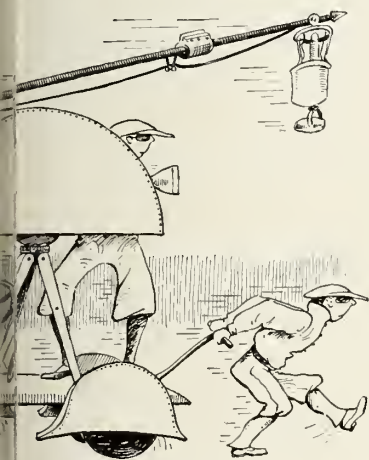
The Cameraman with his
Camera Constitutes the
Sine Qua Non of Motion
Pictures.

FROM THE CAMERAMAN'S ANGLE

No. 2

"You can bet something will be
some day to turn the motion
picture industry inside out. This
will come through the medium of
the camera, mark my words."

KARL FREUND.



CONTINUES WE MAY SEE
VERY SOON.

MISCELLANEOUS

and his friends here miss him greatly. He
mentioned in his letter that there is a
gold mining around his bailiwick and has
to more than eighty years—whiskers, red
hairs and all.

ke Whalen has gone up into the Sierras
for gold. It's a hard rock prospect and
promising.

in Vycokoff has returned home after several
wild animal shooting in the menageries
Wallace-Hagenback Shows in winter quar-
ters, Indiana.

is rumored that Dan Clark is soon to be
direct. If this be true the directorial forces
of cinema are to be honored. They won't
be any better than Clark.

ed Lesterberg is busy putting the finishing
touches on his book, "The Cinematographer's
Tables," which will be off the press
in April. It will be a most attractive,
and useful little volume and, if letters
of all parts of the country are to be credited,
an unqualified success.

ge Toland steps into the limelight as the
cinematographer of "Nana," Samuel Gold-
wyn picture, featuring Anna Sten. Gregg
Korngold's long time first lieutenant to George
Seligman he certainly learned well the wis-
dom imparted to him by his clever preceptor.
It's a fine piece of cinematographic work.

usual activity around the Charlie Chap-
lin is evidence that our old friend, Rol-
lie, will soon be tuning up his Mitchell for
a new grind. What's it to be, Rol-
lie, noisy? A man must be good to stick
with an artist like C. C. for twenty years.

UNIVERSAL

Two first cameramen, Richard Fryer and Wil-
liam Sickner, are being used in the production
of Universal's latest serial, one of twelve chap-
ters entitled "Vanishing Shadow." The three as-
sistants are George Dye, Joseph Krilanovich and
Kenneth Hunter. Louis Friedlander is the direc-
tor of this original screenplay written by Ella
O'Neill.

Charles Stumar is the cinematographer and our
old friend and schoolmate, Karl Freund, is the
director on "Countess of Monte Cristo."

Ted McCord and Joseph Novak, Universal cine-
matographers, are handling the camera for Direc-
tor Alan James, during the filming of "Honor
of the West," Ken Maynard's latest picture for
Universal.

Cinematographer Norbert Brodine is behind the
camera assisting Lowell Sherman who is both
directing and playing the leading male role in
Universal's picture, "Elizabeth and Mary," origi-
nal story by Adrian Johnson.

"Little Man, What Now?" a German best
seller, written by Hans Fallada, now in produc-
tion at Universal, starring Margaret Sullavan and
directed by Frank Borzage, is being photographed
by Charles Stumar, cinematographer for Universal
pictures.

WARNER-FIRST NATIONAL

Ralph Staub, Warner Brothers Vitaphone direc-
tor, has completed his comedy featuring George
Givot, Greek Ambassador of Good Will, and
Charles Judells and will immediately start pro-
duction on another picture that will feature Harry
Gribbon and Shemp Howard. Story is by Jack
Henley and Dolph Singer.

Sid Hickox will take the bows on "Hot Air."

Ernest Haller is in charge of photography on
"Merry Wives of Windsor."

Arthur Todd is starting a nice assignment, "Hit
Me Again," from the original story by F. Hugh
Herbert.

Bud Hoskins is in production on "Fur Coats."

Sol Polito was the cinematographic director of
"Hi, Nellie," Mervyn LeRoy's most recent pro-
duction for Warner Brothers.

George Barnes added another success to his
string in the photography of "Massacre," starring
Richard Barthelmess.

INDIES

Al (Red) Greene reports that he has just fin-
ished shooting the operative work on "Are We
Civilized," a Raspin production directed by Ed-
win Carewe. Leon Shamroy acted as first cine-
matographer and Milton Bridenbecker held down
the assistant's job, while Shirley Vance Martin
shot the stills. The picture was staged at Gen-
eral Studio Studios and features William Far-
num, Anita Louise, Le Roy Mason, Oscar Apfel,
Frank McGlynn and Stuart Holmes. Ruby Skelly
handled the script, Henry Grunstrum, props, and
Neal Neal, grips.

Andy Anderson is very much on the list as
cinematographer on "The Understanding Heart."
It is a Chesterfield production.

Leon Shamroy had a swell bunch of gaffers on
"Are We Civilized," and here they are—count
'em: Dudley Campbell, Tex Cox, Jennings Mc-
Clellan, Ray Jones and Harry Hodges.

UNITED ARTISTS

If an actual cast of sixty-five persons means
anything, then Pev Marley ought to have his work
cut out for him on "The House of Rothschild,"
but Pev is used to crowds and the bets are that
his usual artistic results will be accomplished.

LEE GARMES

To Lee Garmes has come that "hreak" which
so many long for and so few attain.

An ace Hollywood cameraman, whose photog-
raphy in many instances has earned him more
applause than stars, he was assigned the direction
recently of "Fledglings," an epic of the air to
be made by Fox Films.

For many years Lee Garmes' name has been
associated with the art of the cinema. Winner of
one coveted Academy award for outstanding work,
and runner-up on three other occasions, he is
famous in the picture industry for his shadow-
painting effects and the delicate nuances of his
photographic moods.

Made a director a year ago by Fox Film, he
was unable to leave his cameras because of the
demand for his services. Among the most artistic
of his recent pictures are "Zoo in Budapest,"
which experts believe is the finest photographed
picture of the year, and "I Am Suzanne!" both
Jesse L. Lasky productions.

He was chosen to make "Fledglings," his first
directorial assignment, by Producer Al Rockett.
In this picture, which centers around the ex-
periences of a rookie airman at Kelly Field, the
"West Point of the Air," Garmes will start his
career with one of the pretentious vehicles on
the Fox Film program.

His star will be Lew Ayres and his background
the actual flying and ground training air school
at San Antonio.

Negotiations for army co-operation have been
going on for the past six months and are well
on their way toward completion. The flying
school, its equipment and personnel will be utilized
by the company in a truthful picturization of a
flying cadet's trials and triumphs.

LOOKING AHEAD

Karl Freund, Universal director and formerly
chief cinematographer at Universal, speaks up re-
garding the future of the cinema:

"The day will come," says Mr. Freund, "when
pictures will learn to create their own art and
style, but that day is a long way off. The mo-
tion picture industry started out on its own feet
when it started manufacturing silent pictures. It
might have gone on, building, evolving and per-
fecting the original trend if talkies had not made
their appearance. When talkies came into their
own, the whole structure of 'moving pictures' col-
lapsed and fell. Our pictures of today, that is
the greater number of them, are but elaborated
versions of the one time stage plays. One need
not have technique to take a stage play and word
for word place it upon the screen."

Freund was recently acclaimed for his work in
the making of "Symphony of a Town," the story
of life in Berlin from sunrise until sunset, and
he has to his credit "The Golem," "Variety," "The
Last Laugh," etc.

To him there is no more creative force in films.
The industry has lost its ability to think for itself.
Although conceding that good stage plays make
good films, just how many stage plays are there
in a year's production? The records will show
that eight worth while stage plays in a Broad-
way season is huge. And take into consideration
the motion picture industry turns out more than
five hundred pictures in a single year.

"Do you suppose the third dimensional film,
not yet developed, will supply the answer," he
asks. "There is a lot to be known regarding the
taking of pictures, and when that time comes it
will belong exclusively to motion pictures."

One can see that although a director at present,
Freund is still very much interested in the camera
end of the game.

"There is no doubt in my mind that the Ameri-
can method of filming motion pictures is by far
ahead of the foreign method," he said.

TWENTIETH CENTURY

Pev Marley hit the bull's eye in "Gallant Lady,"
a Twentieth Century production starring Ann
Harding. Gregory La Cava directed.

(Concluded on Page 24)

EDITORIAL

"Even more greatly my happiness springs from the deep conviction that this year marks a greater international understanding of the significance in our modern lives of the teachings of Him whose birth we celebrate. To more and more of us the words, 'Thou shalt love thy neighbor as thyself,' have taken on a meaning that is showing itself and proving itself in our purposes and daily lives.

"May the practice of that high ideal grow in us all in the year to come."

THE above is an excerpt from the address of President Franklin D. Roosevelt at the lighting of the National Community Christmas Tree, in Washington, D. C., on Christmas Eve, 1933.

The President's declaration: "May the practice of that high ideal grow in us all in the year to come," is in consonance with the spirit of the cameramen of the motion picture industry.

Certainly co-operation is a sign of the times for, everywhere we turn, we find this principle at work in the multifarious activities of men in the reconstruction of our New World as inspired by the New Deal.

It is traditional that since the beginning of the cinema the cameraman has been the strong hand and willing heart of the industry—ever dependable, ever ready to "take it" and asking only a fair share of the fruits of his energy and ability.

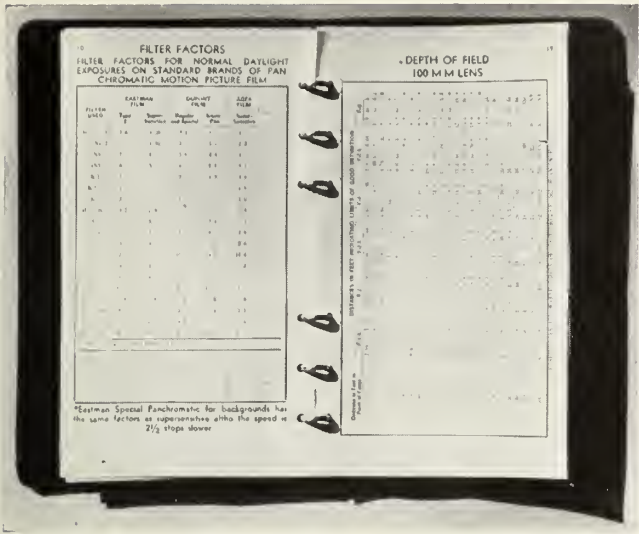
The slogan of the Three Musketeers—"One for All and All for One"—should be the slogan of the cameramen, for only in such spirit can he achieve the highest use-value and the greatest permanent results.

The problems of the cameramen are not unsolvable. In truth they are not even great. All that is required is adherence to the principle that the concern of one is the concern of all; that co-operation is the one essential to success; that the New Deal means protection to the cameramen, producers and the picture going public—all alike; that amity is better than animosity; that old wounds must be healed before the full measure of understanding and success can be achieved and that—believe it or not—better pictures will not be forthcoming until an enduring peace has been established between the producer and the cameraman based upon mutual understanding and mutual trust.

The cameramen are rapidly putting their house in order. They are casting aside worn out theories and junking archaic methods, ways and means. A new vision and a new energy, under a virile directing force, gives promise of quick, enlightened and tolerant readjustment, already on its way, and bidding fair to make the year of our Lord, 1934, the greatest in the cameramen's history.

Salus populi suprema lex esto. (The welfare of the people is the supreme law).

The spirit of the New Deal means just that and **the cameramen are doing their part.**



This is the eleventh installment of the Cinematographer's Book of Tables compiled and computed by Mr. Fred Westenberg, one of the technical editors of THE INTERNATIONAL PHOTOGRAPHER.

Cinematographer's BOOK of TABLES

By FRED WESTERBERG

The last installment of Cinematographer's Book of Tables will appear in the April issue, 1934, and when completed the tables will constitute a handy reference guide welcome to all cinematographers, professional and amateur.

Take note that the tables are so placed in the magazine as to be easily cut out and bound into a small pocket ring book. Cut down the middle of page 19; then trim top and bottom to fit your cover; punch holes to fit rings on inner and outer edges of magazine pages 19 and 20. In response to many demands the publishers have decided to issue the Tables in bound form about April 1st. The book will be printed on tough paper with semi-flexible cloth cover for hard pocket usage and will sell for \$1.00 in the United States.

TYPES OF INCANDESCENT LAMPS USED IN MOTION PICTURE PHOTOGRAPHY

Rated Wattage	Type of Bulb*	Base		Description of Use
		Voltage Rating	Ampere Consumption	
10,000	G-96	115	87.0	Used in 36" Sun Spots and in Sky pans.
5,000	G-64	115	41.7	Used in 24" Sun Spots and in Sky pans.
2,000	G-48	115	17.4	Used in 18" Sun Spots and Studio Condenser Spot Lamps.
2,000 Movieflood	PS-52	115	17.4	Used in color photography. (Life about 15 hours).
1,500	PS-52	115	14.0	Used in Rifle lamps, side lamps and strip lighting units.
1,000	PS-52	115	9.3	Also for Floodlight and glow lighting.
1,000	T-20	115	8.7	Used in Rifle Lamps, side lamps and strip lighting units.
1,000	G-48	115	8.3	Also for Floodlight and glow lighting.
500	G-40	115	4.3	Used in "Lupe" lamps, utility lamps, and occasionally in lighting fixtures.
500	T-20	115	4.3	Used in studio condenser spot lamps.
250	T-14	115	2.2	Used in practical lighting fixtures, table and floor lights, etc.
250 Photoflood	A-21 Inside Frosted	115	2.2	Used in practical lighting fixtures, table and floor lights, etc.

*G=Spherical, PS= Pear shaped, T=Tubular. Numbers refer to diameter in 1/8th inches.

1

26-D

PROJECTION

INCANDESCENT LAMPS FOR USE WITH 8, 16 AND 35 mm.
PORTABLE PROJECTORS

Projector	Required Ventilation	Rated Wattage	Voltage Rating	Type of Bulb	Base	Filament Construction	Rated Hours Life
8 mm.	Natural	50	100, 105, 110 115 & 120	T-8	S. C. Bayonet Candelabra	Monoplane	50
16 mm.	Natural	100	100, 105, 110 115 & 120	T-8	S. C. Bayonet Candelabra	Monoplane	50
16 mm.	Natural	165	100-120 also 28.32	T-10	Medium Prefocus	Monoplane	50
16 mm.	Natural	200	100, 105, 110 115 & 120	T-10	Medium Prefocus	Monoplane	50
16 mm.	Moderately Forced	250	100, 105, 110 115 & 120	T-10	Medium Prefocus	Monoplane	50
16 mm.	Moderately Forced	300	100, 105, 110 115 & 120	T-10	Medium Prefocus	Monoplane	25
16 mm.	Moderately Forced	375	75	T-10	Medium Prefocus	Monoplane	25
16 mm.	Moderately Forced	400	100, 105, 110 115 & 120	T-10	Medium Prefocus	Biplane	25
16 mm.	High Degree Forced	500	Recommended	T-10	Medium Prefocus	Biplane	25
16 mm.	High Degree Forced	750	Recommended	T-12	Medium Prefocus	Biplane	25
35 mm. Portable	Natural	500	100, 105, 110 115 & 120	T-20	Medium Prefocus	Monoplane	50
35 mm. Portable	Moderately Forced	750	Recommended	T-20	Medium Prefocus	Biplane	25
35 mm. Portable	High Degree Forced	1000	Recommended	T-20	Medium Prefocus	Biplane	25

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MICKEY MOUSE COMES IN "LONG PANTS" NOW

Mickey Mouse, that gay young Romeo of animated pictures, whose impossible antics have delighted young and old all over the world, now appears in full length reels of 16 mm. film. The Hollywood Film Enterprises have been supplying the shorter length subjects for quite some time; in fact, during the past year and a half this supply has amounted to several million feet. That sounds like a lot of feet—even of Mickey, but did it satisfy? NO! They demanded more of Mickey, so now to the great joy of the amateur, and those who are not amateurs, they may sit back in their chairs, heave a long contented sigh, and watch Mickey and his pals do their stuff in a full length reel. The Hollywood Film Enterprises, 6060 Sunset Boulevard, Hollywood, can now furnish for your film library the following silly Symphonies, each subject approximately 200 feet, 16 mm.: "The Plow Boy", "The Haunted House", "The Fire Fighters", "Traffic Troubles", "Pioneer Days", "The Barnyard Dance", "Springtime", "The Skeleton Dance", "Midnight in a Toy Shop", "The Merry Dwarfs", "Cannibal Capers", and "Night".

Announcement to Dealers

Fred Westerberg's
CINEMATOGRAPHER'S BOOK OF TABLES
Will Be Off the Press in April.
Order Now!

26-C

2

PROJECTION 35 mm. FILM

PROJECTION BACKGROUND PROCESS

WIDTH OF PICTURE OBTAINED IN PROJECTION WITH
DIFFERENT LENSES AT VARIOUS DISTANCES FROM
THE SCREEN

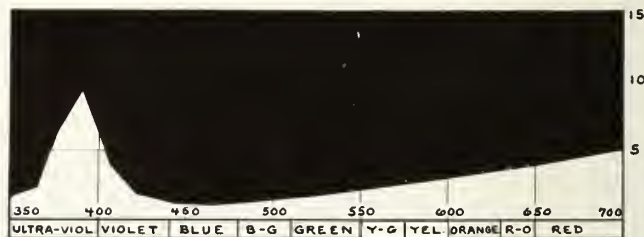
Width of Picture on Screen In Feet	DISTANCE IN FEET FROM PROJECTOR TO SCREEN						Screen Magni- fication In Diam- eters
	4-inch Proj. Lens	4½-in. Proj. Lens	5-inch Proj. Lens	5½-in. Proj. Lens	6-inch Proj. Lens	7-inch Proj. Lens	
8	35.3	39.7	44.2	48.5	53.0	61.8	106
9	39.7	44.6	49.7	54.6	59.6	69.7	119
10	44.2	49.6	55.2	60.6	66.3	77.3	133
11	48.5	54.5	60.7	66.7	72.9	85.0	146
12	53.0	59.5	66.2	72.8	79.5	92.7	159
13	57.3	64.5	71.7	78.8	86.2	100	172
14	61.8	69.4	77.3	84.8	92.8	108	186
15	66.1	74.4	82.8	91.0	99.4	116	199
16	70.6	79.4	88.3	97.0	106	124	212
17	75.0	84.3	93.8	103	113	131	225
18	79.4	89.3	99.4	109	119	139	238
19	83.7	94.3	105	115	126	147	252
20	88.4	99.2	110	121	133	154	265
21	92.7	104	116	127	139	.....	278
22	97.0	109	121	133	146	.....	292
23	101	114	127	140	152	.....	305
24	106	119	132	146	.....	.....	318
25	110	124	138	152	.....	.....	331
26	115	129	144	.....	.....	.....	345
27	119	134	149	.....	.....	.....	358
28	124	139	155	.....	.....	.....	371

Based on Projection Aperture .680 by .906 of an inch.

The use of this aperture, which was standard in the days of silent pictures, is now limited for the most part to projection background work. Having no sound track to consider, full use can be made of the larger area of the old aperture to secure the benefits of reduced screen magnification in projecting the background image.

ILLUMINATION CARBON ARC LIGHT

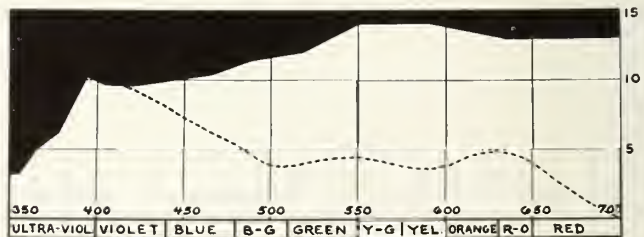
RELATIVE DISTRIBUTION OF RADIANT ENERGY EMITTED BY VARIOUS TYPES OF CARBONS



Energy distribution of Plain Carbon Arc



Energy distribution of White Flame Carbon Arc



Energy distribution of 40 ampere Studio Carbon Arc

Dotted line indicates the relative color sensitivity of typical Supersensitive Panchromatic Film.

Data by National Carbon Company.

MINIATURE CAMERAS AND PHOTOGRAPHY

(Continued from Page 5)

ment, but the photographer must bear in mind that the selection of a single formula for continued use is recommended. In this manner we become acquainted with a definite developer, in relation to its behavior under various temperatures, and the manner in which it develops different films.

To date, paraphenylene-diamine looms as the most efficient grain eliminator. It is a known fact that the lower the reduction potential of a reducing agent (developer) the greater is its ability to produce fine-grained images. By reduction potential is meant its ability to attack the silver halide and reduce it to metallic silver. Some developers perform this action quicker than others. Dr. V. B. Sease of the DuPont Film Co. has outlined the reduction potential of the more common developers as follows:

Paraphenylene-diamine	0.3
Hydroquinone	1.0
Glycin	1.6
Metol, Rhodol, etc.....	20.0
Amidol	30.0

You will notice that of all those listed paraphenylene-diamine has the lowest reduction potential and is therefore capable of producing the finest grain. Results substantiate this fact. Negatives developed in paraphenylene-diamine are capable of yielding prints as large as 11 by 14 inches without grain being visible in the print. Formulas for this developer have been included in an article on miniature photography in the October of INTERNATIONAL PHOTOGRAPHER. Its importance however demands that they should be stated again for the

benefit of those who may have overlooked them at that time.

Two popular formulas are recommended, the first to be used for normally exposed negatives, and the second which produces a finer grain, requires that the negative receive twice normal exposure.

Paraphenylene-diamine Developer, Formula No. 1

Paraphenylene-diamine	90 grains
Sodium Sulphite	450 grains
Borax	255 grains
Tri-basic Sodium Phosphate.....	210 grains
Water	16 ounces

Paraphenylene-diamine Developer, Formula No. 2

Paraphenylene-diamine	72 grains
Sodium Sulphite	420 grains
Water	16 ounces

Developing time: 30 minutes at 68 F.

Dissolve the paraphenylene-diamine in hot water about 180 F. and when dissolved add the sulphite. The borax and tri-basic sodium phosphate is added after the sulphite has dissolved.

Paraphenylene-diamine is usually found to be deficient in contrast with some of the modern super-speed emulsions. It is recommended by many that glycin be added to "pep" up the developer. The following is a satisfactory paraphenylene-diamine glycin formula:

Paraphenylene-diamine	10 grams
Sodium Sulphite	90 grams
Glycin	1 gram
Water to make.....	1 liter

Developing time: 20 minutes at 68 F.

Paraphenylene-diamine formulas should be freshly prepared because this developer does not keep well upon standing.

Here's what an EYEMO can do!

The Bell & Howell Eyemo 35 mm. hand camera doesn't know the word "impossible." Here are some of its "tricks"—with many more in the bag.

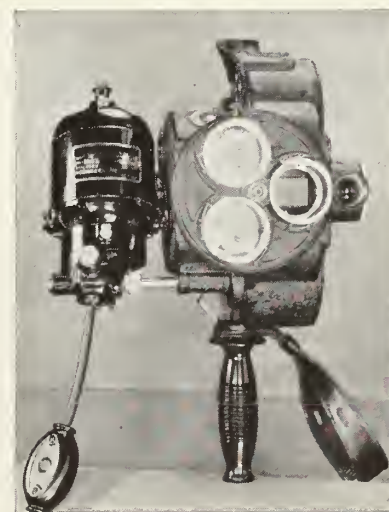
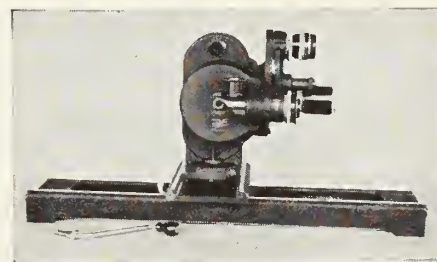
1. Spring motor, electric motor, or handcrank drive provides correct film speed for adding sound. Finder objectives can be etched to show sound picture area.
2. Stand for animation, film slides, titles, etc., mounting Eyemo with single frame exposure device, is available.
3. Precision alignment gauge and prismatic magnifier are available for title and scientific work.
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THE LIFE OF A STILLMAN

By DON MACKENZIE

THE still cameraman is the only studio employee I know who is hired and instructed by his employer to procure a certain quota of work. He goes out on a job and finds that he is a lone wolf. This is not through any personal dislike for him, but largely from a lack of appreciation of the real value of his work.

I have even had cameramen ask me why we had to have more than twenty or thirty pictures to a production, inasmuch as theatre lobbies rarely display more than six or eight stills. Not all people, even in the profession, realize the part that still pictures play in a production.

Beside their display in theatre lobbies stills are used for posters and billboard advertising, for advertising and publicity in newspapers and periodicals. But most important of all for the financial success of a picture the salesman who sells the film carries a complete set of stills, which not only tell the story to the exhibitor, but also show him the cast, sets and costumes. In fact, the exhibitor is rarely interested in the film unless he is first impressed by the stills.

Right here I believe it would not be out of place to correct an impression which seems to be general—that a stillman's job is a cinch. True, there is plenty of sitting-around time on a set, but that, after all, is one of the drawbacks of the job.

Let us follow a stillman through a production and see what his job consists of. First he is told by his production department to get a large number of production stills and also plenty of publicity and off-stage shots and, as a parting shot, is generally told: "Don't let them bulldoze you out of them."

These instructions are given despite the fact that the stillman has been given no real authority to procure the pictures. He must rely on tact and the hope that his director is a "good scout," and oh, yes, sometimes that the supervisor is a "good scout," also that the assistant director, the cameraman, the gaffer and the property man are all "good scouts."

If all these fellows are "good scouts" he begins to feel that he is sitting pretty—provided the star also is a "good scout." But if they are just "one of the mind scouts" his job sometimes shapes up differently. He goes along smoothly grabbing off a scene here and there until the production comes to some high light, maybe one of the real kicks of the story. It may be a highly emotional or dramatic scene. He, the stillman, thinks to himself: "Ah, this is what I have been waiting for!" and then waits in anticipation for an O. K. on the scene that he may shoot his still.

The director and the actors have had a hard time shooting the scene. However, after eight or ten minutes the director is satisfied. It is now twelve-thirty and everyone is hungry. The stillman hollers: "Hold it for a still!" The director goes to lunch, the actors give the stillman disgusted looks. The gaffer, and in fact all the electricians, give him a dirty look and the assistant director glances uncertainly from stillman to actors and finally "compromises" by promising the stillman that he can have the desired shot right after lunch.

After lunch the stillman discovers that the lighting line-up has been changed from an individual close-up and that it is impossible to shoot the original scene. He grumbles to the assistant director, who shrugs—and thus another opportunity is lost.

The stillman then notices that a couple of "leads"

are at liberty and he has an idea for an off-stage publicity shot. He contacts them and if they happen to feel kindly about the idea he next contacts the gaffer—only to learn that he and his assistants are busily engaged in lighting the next scene, but as soon as they finish "he will fix you up." Then when the gaffer is at liberty to "fix you up" the stillman finds that his leads have been called on to the set to rehearse the next scene—and another opportunity is lost. And so it goes throughout the production, except on those rare occasions when all the crew are "good scouts."

The impression also prevails that all a stillman must know is how to focus his camera and time the negative. This is only a minor detail. A good stillman must know how to group his subjects so as to avoid blank spaces and feature the leading players without making it too obvious. This grouping sometimes necessitates changing a light or two, all of which takes time. He must also direct the actors in what he wishes them to do. Inasmuch as it cannot talk a good still should show some exaggeration in action. But try to get the average actor to exaggerate. He is deathly afraid of mugging or over-acting.

Remember, the still man is supposed to do all these things in practically the time he takes to place the camera in position, focus and snap the exposure. If he takes a longer time the director is apt to become impatient. But after the picture is completed the publicity department looks at the stills and wonders why there isn't more "punch" to this scene or that scene, forgetting the obstacles that are placed in the way of obtaining the desired result. They forget or ignore the lack of co-operation that the stillman receives in his work.

Now in spite of all these obstacles he encounters, he does manage to get good production stills with a "kick" and also many off-stage shots. The wonder is, however, that he accomplishes what he does in the limited time at his disposal.

The quality of a set of stills, be they good or bad, are remembered long after the conditions under which they are taken are forgotten.

Who envies the life of a stillman?

THE ASSISTANTS TALK IT OVER



"Did Joe get a job?"

"No. He can't even get a rumor."

"Wally's" First Job

By EARL THEISEN

A description of "Wally" Clendenin, author of the article on page 12 of this magazine, would fit a mobile or animated encyclopedia. He is a character! His knowledge and experiences in Hollywood during the years the picture folk were migrating here is a thing apart. His anecdotes concerning the antics of the personages of those days are a barrel of fun; but he won't tell them for print since he feels the past is where it is and besides they have learned better. However, he will tell one on himself which I have followed in spirit as closely as my ability permits.

In 1908, he was one of the kid operators that were so common throughout the country at that time. His first job was cranking one of the old Edison exhibition machines, the model with the wooden front board. It had no safety shutter, but there was a small mica dowser hinged to the front end of the metal light cone. If the film broke, or for any other reason stopped in the gate, he was supposed to flip down the dowser in time to cheat the local firemen out of a ride. The mica was transparent enough to let a little light through, just enough to permit the audience to admire the scratches and dirt on the stationary film while he did a hasty repair job.

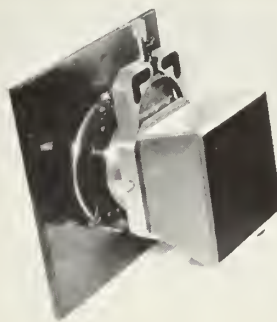
He reminisces: "The cubbyhole in which I worked was only three feet wide, and was directly over the ticket office. The projector was mounted on a shelf along the left side of the booth, and it was possible to crank with the left hand while standing outside the door. This I sometimes did in an attempt to cool off. However, the rheostat—a large contraption consisting of iron wire coils wound on a metal frame—was directly in front of the door and, as the wire coils used to get red hot, I was, as it were, between two fires. The booth got hot, the rheostat got hotter and I got hottest."

The show bore the not unusual title of "THE NICKELODEON." The manager was a thrifty soul, being of Scotch extraction and saturation; the program was, therefore, limited to one reel and an illustrated song. Wally was instructed to crank as slowly as possible in order to make the picture last longer, consequently, when Paul Panzer pursued the beauteous Florence Lawrence across the screen, the audience got a lasting impression that both principals were afflicted with stringhalt.

The illustrated song consisted of a tattered "Professional Copy" and a bundle of colored slides. Most of the slides were cracked and so was the voice of our piano tickler. It was his job to space the slides out properly through the song, but up in the cubbyhole he could not hear the words and frequently the slides did not last long enough. The audience never cared; the only thing that irked them was to have a slide put in right side up, as

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this gave them upside down results.

"The switches for the house wiring were on the wall directly over the front seats," said Wally, "and every time a fuse blew, the customers got a swell view of the fireworks. With the Iroquois theatre fire in Chicago still fresh in their memories, they were apt to be a bit coltish at such a time, often leaving me suddenly alone in the dark with the piano girl—which wasn't as much of a treat as it sounds.

"Our only ballyhoo was a cylinder phonograph in the lobby, with a repeat mechanism on it for playing the same record as long as anybody could stand it. The manager bored a hole above the door, stuck the small end of the phonograph horn through it from the outside, and treated the passing pedestrian to the strains of 'I Got Mine,' filtered through six feet of rubber hose. It didn't seem to be much of a draw.

"The films we ran were genuine antiques, the cheapest the manager could rent from the exchanges. They were nearly all minus a main title and were so scratched, torn, and full of bad splices that my left arm got muscle-bound from keeping them in frame. But what did I care? It was true that I got no money for my nightly roasting, but that bothered me not at all—I got to see all the 'movin' pitchers' for nothing."

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ASSIGNMENTS

(Continued from Page 17 of the
Cameragram)

Clyde De Vinna and Dewey Wagner, "Tarzan and His Mate," Metro-Goldwyn-Mayer.

Ray June, "Rip Tide," Metro-Goldwyn-Mayer.

Oliver Marsh, "Sadie McKee," Metro-Goldwyn-Mayer.

Gregg Toland, "In Old Louisiana," Metro-Goldwyn-Mayer.

Gus Peterson, untitled, Metropolitan.

Archie Stout, "Numbers of Monte Carlo," Monogram-Carr.

Gill Warrenton, "The Loud Speaker," Monogram-Carr.

Archie Stout, "The Curse of Kali," Monogram-Carr.

Ben Reynolds, "Come on Marines," Paramount.

Charles Lang, "We're Not Dressing," Paramount.

Henry Fishbeck, "The Trumpet Blows," Paramount.

Henry Sharp, "Melody in Spring," Paramount.

Hal McAlpin, "Man Who Broke His Heart," Paramount.

Al Gilks, "You're Telling Me," Paramount.

Hap DePew, untitled, RKO Pathe.

Harry Newmann, "Take the Stand," RKO Pathe.

J. Roy Hunt, "Finishing School," RKO Pathe.

Lucien Andriot, "Crime Doctor," RKO Radio.

Art Lloyd, untitled, Hal Roach.

M. A. Anderson, "Birds of a Feather," Mack Sennett.

Jack Stevens, untitled, Universal.

Charles Stumar, "Countess of Monte Cristo," Universal.

George Barnes, "Hit Me Again," Warner-First National.

Sid Hickox, "Hot Air," Warner-First National.

Byron Haskins, "Fur Coats," Warner-First National.

Ernest Haller, "The Key," Warner-First National.

Tony Gaudio, "The Gentleman From San Francisco," Warner-First National.

Dwight Warren, "Frolics of Youth," Educational.

Joe August, "Sisters Under the Skin," Columbia.

John Stumar, "Storm at Midnight," Columbia.

Palmer & O'Connell, "Fox Follies," Fox.

Art Miller, "Bottoms Up," Fox.

John Seitz, "All Men Are Enemies," Fox.

Bob Planck, "Masquerade," Fox.

Joe Valentine, "Three on a Honeymoon," Fox.

Barney McGill, "Murder in Trinidad," Fox.

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This feature is very essential to constancy in photographic results.

In addition to the elimination of the trouble of color variation they have solved the problem of constantly

touching up the make-up. The reason is that there are no ingredients which will penetrate sufficiently into the pores of the skin to produce any stimulation of the sweat or sebaceous gland which results in perspiration. This perspiration or constant sweating brings to the surface of the skin a secretion which acts as a solvent of the grease paint and in the places where it is added there is the possibility of overlapping, which cannot be seen by the naked eye but which is apparent to the film. Not only has De Long eliminated this condition, but they have succeeded in producing a make-up of very fine consistency, requiring very little rubbing in to impart a smooth, velvety texture to the skin.

Due to the high red sensitiveness of Panchromatic film any make-up containing too much red must be used in relatively dark shades to obtain a satisfactory photographic result. With the De Long Nuchromatic Make-up comparatively little red coloring is used and the result is a more neutral blend enabling a lighter and more natural looking make-up to be used.

UNDER THREE FLAGS

(Continued from Page 3)

The San Antonio Chamber of Commerce told us the weather would be fine, just like California—and just like California it was—very unusual. Whenever we set up the camera the sun would disappear and usually it started to rain. Here flares were used as a last resort, and the results were surprising, so good.

When we finally started for Laredo, there to cross the Rio Grande, everyone was in high spirits in anticipation of the good times awaiting us in Mexico. Of the huge delegation that met us on the other side the most popular man was the agent of the Bartega Rum, who freely distributed large samples of his wares. He was well photographed and not with blanks, either. The bars did a huge business but after Kansas "corn" a real drink tasted like a chaser, but the same effect was there. Yet we managed to stay in focus sufficiently to shoot the official welcoming delegation.

It was a great event for them and secured their good will which followed us on our entire trip. I must say that a more friendly people I have never met. Here we were joined by a Mexican censor and an escort of the Federal Highway patrol, both of which became permanent fixtures to the expedition for the balance of the trip.

Our run to Monterey (King of the mountains) was over the first link of the new Pan-American highway—a paved road and very fine, considering the barrenness of the country and the fact that there was no visible means of support for such a highway except for an occasional tourist. But it has been built for the future. Old Monterrey has all the charm that the song suggests, and here we spent a pleasant day. It is both beautiful and historic, and should before long be the mecca of tourists who want the unusual.

It was our last sight of good roads, good food, good beds and toilets until we reached Mexico City, for here we started on a six hundred mile stretch of road that was seldom traveled. We went over mountains and rivers, through gorges and jungles, an ever-changing vista so beautiful that the drivers found it hard to keep their eyes on the road which is an absolute necessity along parts of this road. There were Indian villages where Spanish was not spoken or even understood and old Spanish towns that still bore the marks of the conquistadors and revolutions. Ill luck was again with us for it was cloudy most of the way and for two days it rained. Part of this road is in the process of construction and only the preliminary work of grading was being done. It was in

no place impassable, yet sometimes the road for miles was nothing more than a ten-foot shelf chisled out of the side of the mountains where a false move would have meant a drop of thousands of feet. Tourists were not yet numerous enough to have changed the services or accommodations at the old hotels, the food was purely native, and we ate three times a day of goat meat, beans, rice, tortillas and chicory with hot milk. Some of the boys lost weight and some preferred to sleep in the cars. The route of the caravan can be traced on the map of Mexico by a southerly course from Monterrey, through the towns of Ciudad Victoria, Valles, Tomazunchale, Ixmiquilpan, Pachuca and Mexico City.

I have heard of the "Old Spanish Custom" but never really knew what it means until we saw the señoritas promenade around the plazas, the caballeros (gentlemen to you) doing likewise, only in the opposite direction, to the accompaniment of the town band. Thus are introductions consummated; that's the old Spanish custom.

The gas tank of the camera car was punctured crossing a rocky river bed and there was no means of fixing it until we reached Mexico City. This was three hundred miles away, and we proceeded using a five-gallon gas can on the running board and a piece of hose. But a five-gallon can of gas doesn't last long on those roads, so about every hour we had to hook up a new one.

Tomazunchale proved to be one of the most picturesque towns on the entire trip, and here we were welcomed by the town band. The surrounding country was desert and the roads were lined with cactus fences so thick as to make them impassable for humans.

One has to be extremely careful in photographing in Mexico, and it was only due to the fact that we had a censor that our negative did not have to be developed there.

Mexico City gave us a grand welcome in true Latin style. It is a beautiful and cosmopolitan city but has not the charm of the rural districts—yet it was very interesting, and from here we visited some of the wonders of the trip. There was a day spent at the pyramids, older than those of Egypt, and at the citadel and temple with its many different kinds of architecture which gave evidence that more than one civilization had used it as a place of refuge and worship. We visited Mt. Toluca, a now extinct volcano crater, and on this trip reached an altitude of 14,700 feet. Very little work was done as everyone suffered at this great height.

At the floating gardens at Xochimilco we were ban-

(Turn to Page 31)



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MOTION PICTURE SOUND RECORDING



HIS chapter continues the discussion that was begun last month of the permanent monitoring equipment and its functioning.

The first installment on monitoring described the potentiometer that is connected in the output circuit of each microphone; and explained the manner in which it is operated to control the flow of speech current from the microphone. The path of the speech current was traced through the potentiometer and the monitoring, or "booster", amplifier; and it is at the output of the amplifier that this chapter picks up the discussion.

The Main Volume Control

Between the output of the booster amplifier and the transmission line linking it with the main recording amplifier is a potentiometer of the same type that is connected in the output of each microphone. This potentiometer is known as the main volume control, and has for its purpose the regulation of the overall amount of speech energy that is recorded; whereas the individual mixer potentiometers are provided only for controlling the amount of speech current coming from each microphone. If several microphones are employed for recording, as is done for orchestrations, the potentiometers connected to the individual microphones can each be adjusted to provide the correct proportion of speech current and left at that adjustment; the main volume control alone being used to control the amount of energy fed to the recording amplifier.

The Volume Indicator Meter

The main volume control is mounted in a small cabinet with a slanting front, which is placed on top of the monitor desk. Mounted on the panel with the main volume control is a meter known as the volume indicator extension meter. This meter is connected in series with another similar meter in the amplifier room, the two meters being shunted across a resistance in the plate circuit of the vacuum tube in the volume indicator circuit. The input circuit of this vacuum tube is connected through a special tapped transformer to the output of the main recording amplifier in the amplifier room. The two meters read exactly alike and indicate at all times the electrical level of the speech current that is being recorded. The meters act like alternating current voltmeters, measuring the voltage that is applied to the recording device.

The indications of a volume indicator meter are purely relative; and the monitor man judges the amount of sound that is being recorded by watching the continual deflecting, or "kicking", of the pointer. The pointer moves under the influence of each sound that is picked up by the microphones and transmitted to the main amplifier, the amplitude of the pointer movement being governed by the volume of the sound causing it. Only the peak values of the sounds, and not their average values, are indicated by the meter. To prevent overloads of the recording system, the meter pointer is not permitted to deflect beyond a certain predetermined point on the meter scale, the point usually being at about fifty.

The volume indicator meter, being an electrical device, is not prone to the errors that afflict the human ear. It is almost impossible for even an experienced monitor man to record sound at the same average level day after day without the aid of an electrical device to supplement his hearing. The monitor horns assist the monitor man in

Chapter VI

By
CHARLES FELSTEAD
Associate Editor



securing the most pleasing balance of the various musical instruments in making orchestrations, in checking the recording quality of actors' voices, and in detecting the presence of any interfering noises that may be picked up by the microphones, such as the noise produced by camera gears. But the volume of sound that is recorded is determined by observing the deflecting of the volume indicator meter pointer. It is extremely difficult to monitor successfully without the aid of both monitor horns and meter.

Signal and Communication Equipment

Standing beside the cabinet that holds the main volume control is a duplicate cabinet, on the panel of which are mounted the six colored lenses of the signal system and four key switches. Two of the key switches operate lights of the signal system; the other two switches provide the monitor man with controls for the relays that transfer the monitor horns from the direct recording circuit to either of the photo-electric cell circuits. This arrangement permits the monitor man to check the light valves on the two film recording machines during the making of each take to assure himself that they are operating properly and the sound is being recorded on the film. This subject will be discussed in a later chapter.

Besides the four switches, there is a push button on the signal panel. The pressing of this button turns on a small public address system, the horn of which is mounted on the wall of the sound stage. This allows the monitor man to give directions to the microphone man and other persons on the stage without recourse to the more inconvenient intercommunicating telephone. The public ad-



A motoring setup that is somewhat unusual, because it provides for the control of as many as twelve microphones. It is advantageous to have two men at the controls when scoring music. Courtesy Paramount Pictures.

dress system comprises a two-stage transformer-coupled amplifier, which is provided with power from the alternating-current light line by a rectifier, a double-button carbon microphone, and the small horn on the stage wall. A tap switch in the metal box that houses the amplifier provides limited control of the amount of amplification. The quality of reproduction of this system is rather poor. The general arrangement of the apparatus may be seen in the accompanying diagram, which is republished from last month.

All circuits in the monitor room, and all circuits connecting the monitor room with other portions of the recording system, are wired to connection blocks at the back of the metal frame that supports the jack bay. By this arrangement of connection blocks, it is not difficult to cut in on any portion of the monitoring circuit without disturbing the wiring of the equipment itself. New apparatus may be substituted for apparatus that is giving trouble, and circuit alterations can be made with ease. By means of "patch cords" and the jacks of the jack bay, less permanent changes can be made in the recording circuit and auxiliary apparatus, such as wave filters and attenuators, can be quickly added without disturbing the wiring at the connection blocks.

Duties of the Monitor Man

The monitor man usually calls for a sound rehearsal before the shooting of each scene, or perhaps for more than one rehearsal; but if the scene is a short one and the action not involved, he may be able to secure his recording level while the director is making the dialogue rehearsals. The less time consumed by the monitor man in arranging the placing of the microphone and in sound rehearsals, the more thoroughly he will meet the approval of the director.

The monitor man is in direct charge of the sound crew, so far as production activities are concerned; and the whole responsibility for the quality of the recorded sound rests on him. Skill and experience and the co-operation of the other workers on the picture are his allies. Even though the photography of a scene is satisfactory, the sound record may not be; and several takes may be necessary to produce a pleasing sound record.

The actual control of the operation of the sound department during the shooting of a picture devolves on the microphone man; for he is on the stage, and so in the most



How the striped sticks are clapped together to provide starting marks on the sound picture films. Courtesy RKO Radio Pictures. Photo by Fred Hendrickson.

convenient situation for the operation of the signal system that directs the starting and stopping of the recording machines. Actually, the monitor man gives the orders, but it is the microphone man who is responsible for the operation of the signal lights.

Sound Stage Technique

An intercommunicating telephone and a system of colored signal lights assist the microphone man in coordinating the activities of the other divisions of the sound department with the action taking place on the sound stage. He receives his instructions from the monitor man through the telephone system and through a small loud speaker mounted on the wall of the stage. These instructions are for the placing of the microphones, and for their movement during the take to follow the action.

By means of the signal lights, the microphone man warns the recording room when to make ready for a take, and again when to start the motor system. He then calls for silence; and, at the flashing on of a red light turned on by the recording men, he calls, "Speed!"

(Continued on Page 29)



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"CHEERIO HOLLYWOOD"

By ALFRED C.
MOORE, *Journalist*



AM not in the movie game, but I have been on the outside looking in hard for twenty years now, so I can tell you boys sincerely and without inside knowledge to distort my view, just how I and hundreds of thousands of other Englishmen feel about paying good hard cash for motion picture entertainment.

Despite all that English self-styled film critics say to the contrary, American-made pictures rate first with the majority of British audiences and are likely to go on doing so. This is due to a complexity of reasons which may not be immediately evident to a person not born and reared in England.

The chief reason that enables the American product to get over where the home-made cannot is, of course, difference in tempo.

Maybe they do not realize it with fully-awakened consciousness, but John Bull and his wife want fast-moving entertainment just as much as folks want it in New York and Tuscaloosa. British film producers do not know how to make entertainment move fast enough, so, despite a wave of perhaps unprecedented economic nationalism, Mr. and Mrs. Bull and the boys and girls are glad to pay their shillings and half-crowns for a laugh, a thrill, or a heartache made in U. S. A.

Although we in this country are repeatedly told that Elstree or Welwyn or Twickenham is about to inherit the earth, we just hide a laugh (if we were not a "naice, refained" race of people we would say "Nerts!").

Apart from the fact the British film companies apparently believe that a talking picture is merely an embellished duplicate of a stage play, and that scissors were made only to cut cloth, speaking generally they strive to mirror the dully conventional aspects and to reproduce the dully conventional dialogue of Mayfair, or Whitechapel, or Suburbia or of Lancashire. The pro-

jected result is sleep-inducing.

A little while ago Clara Bow visited this country, and, unlike many foreigners, took a good look at it. Back home Clara is reported to have declared "England's nice but it's a slow-motion film." Thereby Miss Bow said a . . . (excuse me) . . . indicated where English producers fall down. They make films of what Miss Bow saw and recognized and of what nearly everybody here sees but does not recognize. That is the explanation of British slow-motion films.

Yet a good story *can* be superimposed on a British background. Fox did it with "Cavalcade." There is lots of material here and not only of the epic kind. The British mercantile marine, for example, is just crying out to be picturized with sound. Personally I can't see any British studio doing it as a box office proposition—they would surely ruin it with a mixture of Mayfair "refainment" and Cockney "jokes."

Another reason why American films find appreciative audiences here is the "wisecrack."

The word "wisecrack" defies adequate translation into "King's" English, for it is neither a "joke" nor an epigrammatic witticism but a combination of both. It is something of essentially American origin and with a well-stocked bag of smart wisecracks, the American director can make even a thin story look good.

If an Englishman tries to wisecrack the result is usually pretty punk because he hasn't got that kind of a mind. So the English director is handicapped in his dialogue from the word "go."

Another handicap is that English slang is merely puerile. For instance, "posh" or "pukka" means "smart" or "swell." "I'll give you a tinkle" is the English way of saying "I'll call you," and "Cheerio!" (some even say "Cheeri-*ho*!"), "Bung-ho!" and similar infantile phrases is the English equivalent of "Here's how!" or "Here's mud in your eye!" Imagine! Nevertheless, people who talk like this will fall out of their seats laughing at a smart American crack, yet will come out of a theatre and forget it completely, lapsing into their "awfully jolly" or "blimey, not 'arf" manner of speech,

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according to their particular temperament.

Thus it comes about that comedy produced in a British studio under British direction is either crude pantomime or dry epigram, registering on two extreme types which form generally not more than ten per cent of the average audience in Great Britain. And this type of stuff is completely useless from a box office viewpoint in the less conventionally-minded colonies.

I suppose I don't have to tell you that English film drammer is invariably a long-drawn-out affair with actors and actresses "emoting" before the camera and speaking lines carefully (oh, so carefully) into the mike.

And English film critics. Oh, boy! Read this (from yesterday's "Sunday Pictorial"—"Sales Vastly in Excess of Any Other Picture Newspaper"):

"At the Empire we have Warner Baxter and Loretta Young in a crook drama with some unusual aspects. (Film referred to is M.G.M.'s "Crooks in Clover" from the story "Penthouse.") I was in two minds about this film until Loretta Young appeared and then my doubts vanished. Loretta Young is just about the most improved actress in pictures. With almost every film she shows a greater command of her art. She has completely escaped from the vamp stuff which threatened at one time to limit her to incredible characters in unbelievable drama. She is now showing that she is an accomplished actress with great versatility and an unerring sense of dramatic situation."

Joke is that *Loretta Young isn't in this picture at all!*

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MOTION PICTURE SOUND RECORDING

(Continued from Page 27)

to warn the director and actors that a take has commenced. At the conclusion of the take, he switches off his lights, thereby notifying the recording room that the shot has been completed. The microphone man keeps a log of all takes made during his shift, and whether the shots were satisfactory or not. For this task, co-operation with the script girl is necessary so that the correct numbers will be recorded for each take.

To provide exact synchronizing marks on the sound and picture films, the assistant cameraman steps in front of the camera as soon as the motors get up to speed and claps his hands, or claps two sticks together. He holds up a small blackboard at the same time with the scene number, picture title, director's name and other information written on it, and repeats the words on the blackboard aloud.

The clapping of the two sticks may be exactly located on the picture film by the picture frame in which the sticks are seen to come in contact; and the corresponding point on the sound film is marked by a wide dark band, which was made by the sound of the sticks striking together. The words on the blackboard and the identical words spoken by the assistant cameraman permit identification of the corresponding picture and sound strips of film. Without this system of marking, considerable confusion would exist in matching sections of sound track to picture scenes. A hand punch was used on the picture and sound track in the early days of recording, but it was too inconvenient to be satisfactory.

The next chapter will discuss the monitoring equipment and its operation; while the chapter following that will deal with the actual handling of the microphones for straight dialogue recording and for "scoring," which is the recording of the music to accompany a production.

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MISCELLANEOUS

COMPLETE COURSE IN FLYING—If interested in aviation, see Roy Klaffki, 1605 North Cahuenga Ave., Hollywood.

WANTED—To know of the whereabouts of motion picture relics, documents, or equipment of a historical nature for Museum purposes. Write Earl Theisen, care of International Photographer, 1605 Cahuenga Ave., Hollywood.

TRICK PHOTOGRAPHY. Exclusive agency for three leading Hollywood makers of trick lenses. Apply for prices and demonstration, sale or rentals. Camera Supply Co., Ltd., 1515 Cahuenga Ave., Hollywood.

UNDER THREE FLAGS

(Continued from Page 25)

quoted by the Highway Commission. It was indeed a grand climax to all the banquets, for it was by far the best of all. Later we toured the canals in a barge and were able to get many shots of unusual beauty. We met President Rodriguez in the palace who received us very cordially, and Ambassador Josephus Daniels kindly invited us to tea at the American Embassy.

Sunday was a gala day—the day of the bull fight. We were fortunate that we should be there on the opening day of the professional season. Sporting Mexico was out in full force to cheer the Spanish matadors and they were as enthusiastic an audience as I ever saw at a World's Series. I missed some of the fine points, for it kept me busy trying to keep the bull in the finder. We succeeded in getting 2,800 feet of good film which the studio will use some day, I hope.

The next day we started on the last leg of the journey to Acapulco, on the Pacific Coast, and three hundred miles south of Mexico City, which was as far south as we would be able to go. The road was mostly mountainous and took us through some of the older parts of the country that had first been settled by the Spaniards. Cuernavaca was interesting as the big resort city for the wealthy Mexicans.

At Taxco we spent the day photographing the historic cathedral that was the finest and most ornate we saw on our entire journey, and at night we broke out the flares for a few shots around the plaza.

Only native-made articles were sold here in Taxco, and everything was most primitive, no modernism was permitted and the townspeople seemed just as well off. These simple natives did not even attempt to overcharge us. It was with sorrow that we left, for a month's visit would not have exhausted the possibilities that were in Taxco.

The last day was a hot and dusty drive and when at last we pulled into Acapulco in the afternoon, Mr. Rolan, the chief, who was driving the camera car, headed for the beach and did not stop until the front wheels touched the water. Here we stopped, as deep as ever we were in Canada's mud and it took the combined efforts of some fifty urchins to get us out. This was the official end of our trip, but not until the mayor of Acapulco had shaken hands with everyone and treated us to lunch and drinks.

It was the end of twelve thousand miles of travel, though many of them tough, it was a trip that everyone will look back upon with pleasure, not only for the wonders we saw, and for the hospitable receptions received everywhere but for the new friendships made among the personnel.

They were a fine bunch, these forty-five oil men, and I hope some day to make another trip with them.

CURTIS VISITS TEK-NIK TOWNE



Major Ted Curtis, general sales manager of the Eastman Kodak Company, is in the Screen Capital for the purpose of looking over the field. The Major cherishes an unconcealed liking for Hollywood and vicinity, but he is usually too busy to talk about it. Yes, sir, the film business is good. So is the Eastman business in photographic equipment.

HOLLYWOOD STUDIOS OF THE EARLY DAYS

(Continued from Page 13)

Alhambra Ave., Selig, and L. B. Mayer on Mission Road, Herman studio at Santa Monica, which was afterward used as the Douglas aircraft factory—the round-the-world plane in the Los Angeles County museum was constructed there—the Mena studio on Fountain Ave., Superior studio in the Knickerbocker building on Olive St., Pacific studio on Santa Monica Blvd., and Henry Lehrmann and Irvin Willat at Culver City.

It is interesting to note that while most of the studios we have covered have disappeared completely, the original Selig plant in Edendale is still in use, being occupied by the Fanchon Royer productions.

Alvin Wyckoff

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Out of Focus



By Otto Phocus

PEACEFUL VALLEY



This action still was exposed in a sample room of the Beverly-Hill Hotel, Beverly Hills, Cal., and reveals the orderly, systematic and peaceful method of arriving somewhere, sometime in the settlement of disputes that have been called to the attention of the Deputy Administrator.



GREAT progress has been reported and a satisfactory solution to the many problems presented may be expected almost any time from now on. Rome wasn't built in a day and Roman Scandals wasn't finished on schedule, so if everyone will keep his blimps closed, something may happen.

First of all it must be determined if raids have been made on talent by the studios. Of course this is something hardly anyone knows about, but the main issue in this case will be to decide who has the talent. Many studios have thought they had talent until the picture was released. But that's beside the question. As soon as these important things are cleared up to the dissatisfaction of all we can expect the "help" to get a break. Some of their problems are familiar, but we might recall a few in passing.

The extra players want to play bits. The bit players want to play parts. The part players want to play juveniles and ingenues. The juveniles and ingenues want to become stars. The stars want to become directors. The directors want to become executives. And the executives want to become politicians. This can be settled by adding another "over-riding" clause.

The rest will be a cinch. Take the grips, electricians, props, carpenters, laborers, gardeners, artists, powder men, splicers, wire men, title men, wardrobe, developers, inspectors, cutters, script clerks, asst. directors, leg men for asst. directors, mechanics, truck drivers, chauffeurs,

stenographers, clerks, cameramen, projectionists, watchmen, bookkeepers, telephone girls, painters, plasterers, doubles, standins and about 100 other classifications and give them jobs with some work attached to it (and some pay) and peace will reign again—like it does in Mexico.

DO YOU KNOW?

That it was Charlie Clark that went to China for M-G-M. and not Roy. My error.

That some people think their radios should be played at 170°.

That Louella O. Parsons wrote on Jan. 26th . . . "and the excellent photography is credited to a new cameraman, George Folsey." You tell her, George.

That Milton Gold is an expert at photographing falling trees. Ask him about it.

That Buddy Harris is back at Universal after being away for several years.

That Jimmie Palmer has a new set of dining room furniture.

That Howard "Duke" Green and the Marquis have returned to the Orient again for Technicolor.

That the Mervyn LeRoy wedding was wired for sound.

That it must have been variable area as he left for a four months' tour shortly after.

That I know a Scotchman who is closer than the calibrations on a 25 mm. lens.

That it was reported that some cameramen offered to work for \$1.75 per hour.

That it has been rumored they were told they were not worth it.

That Alfred "Buddy" Williams was a fireman and a telegraph operator and can remember working for Paramount in their Paris Studio.

That Charlie Chaplin worked a half day recently. So did I.

That Henry Girard saw service with the Princess Pat Regiment.

That Chas. Edgar Schoenbaum photographed Wally Reid's last scene.

That Raider Olsen has sailed before and after the mast.

That Harry Merland was formerly an interior decorator. And still is.

That Buddy Williams claims Russell Harlan is the most economical assistant in the low price field. Westerns.

That Elmer Dyer looks down when he shoots up. Akeley.

That Ed. Estabrook splits his name with Turner.

That Alex Phillips did his bit with the Canadian Signal Corps.

That Osmond "Bordy" Borradaile received screen credit on a recent British International Production.

That on a recent interview for cameramen many were called but few were chosen. In fact they are still looking for someone to make a trip to the South Sea Islands for the boat ride.

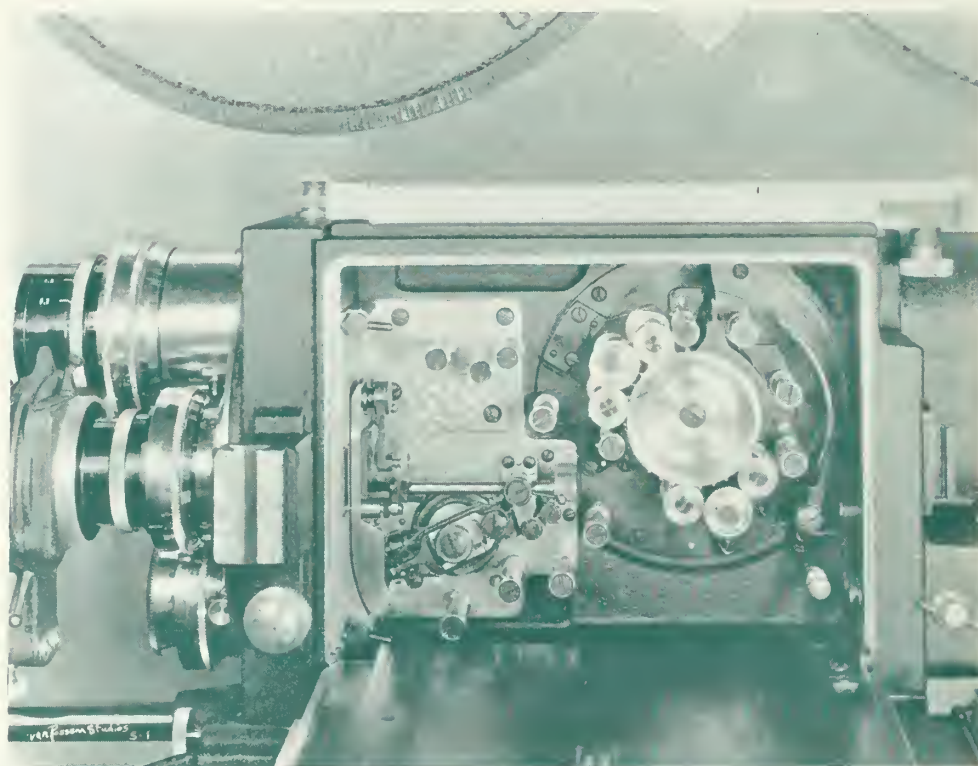
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HOLLYWOOD

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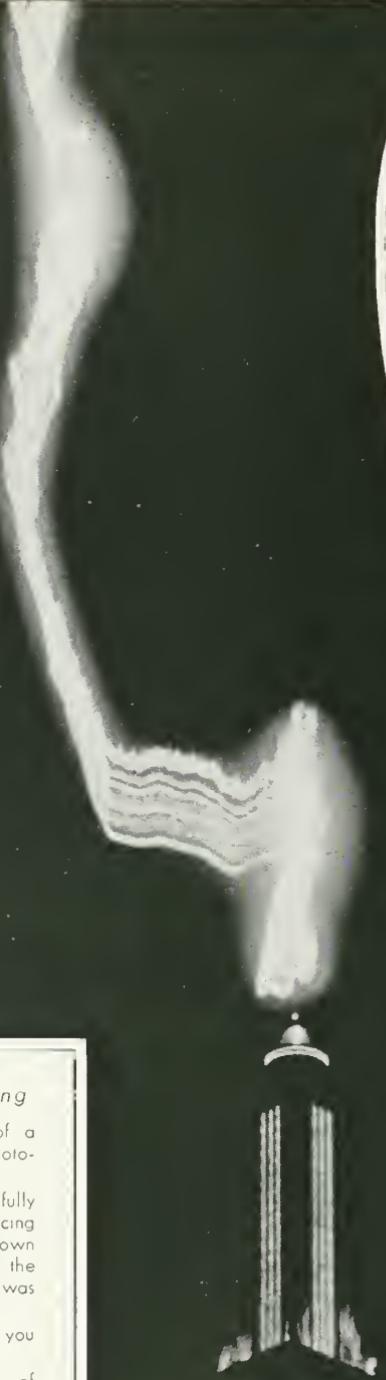


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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 6

HOLLYWOOD, CALIFORNIA, MARCH, 1934

No. 2

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JOHN CORYDON HILL, *Art Editor*

HELEN BOYCE, *Advertising Manager*

A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing, Film Editing, Sound Recording, Projection, Pictorialists.

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Printed in the U. S. A. at Hollywood, California



ANNOUNCEMENTS FOR APRIL

Karl A. Barleben, Jr., famous Leica expert, will take his miniature camera and note book to sea again.

Earl Theisen will be back with an unusually interesting article on the evolution and development of lamps and lighting of the motion pictures.

Augustus Wolfman, miracle man of the Miniature Camera, who writes on "The Enlarger" this month, will take up another phase of this fascinating subject.

"Art in Motion Pictures," by Miss May Gearheart, supervisor of Art in Los Angeles schools, which was promised for March, will surely appear in April.

"Patterns of Illumination," by F. Morris Steadman, promised for March, will not be ready until April. This will be Mr. Steadman's most fascinating article on his journeys into the Realm of Light.

Charles Felstead, Associate Editor, will present Chapter VIII of his fine series on Motion Picture Sound Recording. Mr. Felstead's articles are attracting wide attention, even far away India being interested.

Harry Mimura, our brilliant young Japanese contributor, will be present with another story on Japanese production. Mr. Mimura is a well known assistant cinematographer and a clever writer.

Paul R. Harmer will furnish a lot of useful information and entertainment for anyone who wants to know "How Earthquakes Are Made to Order in the Movies." He will also tell about home-made volcanic eruptions.

Fred Westerberg's Cinematographer's Tables will be completed in April unless something else presents itself to his fine technical mind. And this suggests that the Tables will soon be bound and on the market. Get yours while the getting is good.

Walter Bluemel will have another delightful and constructive article on 16 mm. subjects. And, to those who are interested in junior cinematography, it will be worth while to note that henceforth Mr. Bluemel's department will be known as "Small-film-iana," a word of our own coining.

In our Television Department a feature article is offered that no Television fan should overlook. This marvel called Television is coming fast, girls and boys, and it will be to your interest to keep informed of its progress by reading INTERNATIONAL PHOTOGRAPHER.



FROM PIGS TO PICTURES

(The Story of David Horsley)

By WILLIAM HORSLEY

Part I.

IN order to get the true perspective for the story of David Horsley it is necessary to go somewhat into the background and begin with his very early surroundings. He was born on March 11, 1873, in a small coal mine village called West Stanley, County of Durham, England. This village was owned and operated by the West Stanley Coal Company and consisted of three coal mines, called the Kettle Drum, the Busty, and the Lizzie. The output of coal from the three mines averaged 1500 tons per day.

The miners' houses, which comprised the village, were all owned by the coal company. His grandfather, William Horsley, was until his death general manager of the company. His father, Robert Horsley, was master mechanic and boss blacksmith over the three mines. His grandfather on his mother's side was John Chaytor, who was the saddler and harness maker for the same company and took care of the harness for some three hundred horses and ponies used for hauling the coal both below and above ground.

Now in order to get the proper idea of an English coal mine village as it was sixty-five years ago you must look back before the days of motion pictures, automobiles, and trolley cars, electric lights and inside plumbing. There were none of these things then.

The average coal mining community consisted of three things. First was the coal mine where the miners were employed during the day; second, the long rows of so-called houses where the miners lived and which were owned by the coal companies.

The typical coal miner's home consisted of one room on the first floor, which had an open fireplace where the meals were cooked, and this room was used as a kitchen, a living room, dining room, and at night the



William Horsley

master's bedroom. Over this room was an attic with a ladder or stair to reach it, and this attic was used as a bedroom for the children, and there were always lots of children. On the rear of the one-room mansion was built on a small room usually about six by six feet, which was called a pantry, and this is where the food was kept.

At the rear of the miner's home all nicely fenced off was a garden where he could raise vegetables and at the end of the garden was the toilet and last but not least the pig sty. No home could be considered complete without at least one pig.

The third and most important thing in a coal mine community was the public house, or in plain United States, the beer saloon, where the miners drank. When a miner had been down in the coal mines working hard all day and he came home in the evening and ate his supper there were just exactly two things he could do. He could either go to bed or go down to the saloon. His wife had already taken care of the pig, so that didn't worry him.

He had no daily newspapers nor magazines to read, and if he did have them all he had for light was tallow candles.

In this environment David Horsley was born and lived until he was eleven years old.

One day, to be exact, on January 18, 1884, he was sent by his mother to the store to purchase some meal to feed the pig. Even though his dad was a blacksmith he had to have a pig. On his way to get this meal for the pig David had to cross the railroad and was struck by the locomotive on a coal train and knocked down and fell with his left hand on the rails. The locomotive cut off three fingers and when the train had passed he picked up the severed fingers, put them in the bag, and ran home. When his mother saw the mangled hand and arm she screamed and Dave said: "Never mind, mother, there's only one wheel went over it."

This accident caused his arm to be amputated about two inches below the elbow. Thus, the reader will see, that a pig was the indirect cause of Dave Horsley making motion pictures.

The struggle to make a living fifty years ago in an English coal mine village for a man with two hands was a tough one and no joke. His mother saw that if he was to become self-supporting something must be done and done soon. He was nearly twelve years old and that was the age when boys had to go to work and earn their living in those days. So, mother sold off the furniture and bought tickets and nine months from the day of the accident, or on October 17, 1884, the Horsley family arrived at old Castle Garden, which was then the emigrant landing station in New York.

After living in New Jersey for two months the family



In this building at 900 Broadway, Bayonne, New Jersey, twenty-two feet wide, fifty-two feet long, on a lot one hundred feet long by twenty-five feet wide, David Horsley started making motion pictures in 1907 under the name of Centaur Film Company. When the Motion Picture Patents Company was formed in 1908 every single company in the U. S. was allowed to join except the Centaur Co. "They only had a wash tub and a sink", was the excuse for refusing a license. This then became the birth-place of the independent motion picture industry of the United States, and in five years time it became so big that it killed the trust which tried to strangle it in the place where it was born.

moved to Bayonne, New Jersey, about six miles away. Here Dave helped out the family expense account by selling newspapers and acting as a Western Union messenger boy until he was about 16. During this time the owner of the Bayonne Times, a Mr. J. T. R. Proctor, had taken a kindly interest in him on account of his loss of an arm and started him at night school where he studied shorthand and bookkeeping. He thus succeeded in getting a position as a timekeeper in the Tide-water Oil Works. This position he held until he was about 19 and the craze for bicycles became so great that he started in the bicycle business for himself and, in spite of his only having one arm, he bought the parts and tubing and built bicycles to order, doing his own enameling and putting out a finished bicycle ready to run.

About the year 1903, when he was thirty years old he purchased a lot on Avenue D, Bayonne, 25 by 100 feet, and built a one-story wooden building 25 by 52 feet and in this building he installed six pool tables and put up

Loop." Good old loop, we still use it. Every single company in the United States which was engaged in making motion pictures at that time was made a member of the newly-formed Patents Company and given a license to operate, except Dave Horsley with his Centaur Film Company. He made application and a committee of three visited his place to look it over. While Dave was in the rear with one of the committee the other two stood on the front steps and one of them said to the other: "Why, this son-of-a-sea-cook ain't got nothing. All he's got is a washtub and a sink. We won't give him a license and he won't last thirty days."

As soon as the Patents Company had things fixed up to run they formed the General Film Company to handle the film exchanges and rent film to the exhibitors and collect each week from the owner of every projector in the United States \$2 license fee to use the "loop" and they either had to pay or they did not get any film to run.



Panorama of the David Horsley Motion Picture Studios and Menagerie on Main Street at Washington Boulevard, Los Angeles.

a big sign on the front of the building, "Horsley Pool Parlor." Here he did very well until 1907, when the panic started. Oh, boy! What a panic!

Every one of the boys and young men that used to spend their evenings shooting pool at Horsley's were the very first ones discharged when the panic struck. This put the Horsley Pool Parlor out of business.

One of the pool parlor customers was a young man named Charles Gorman. Charles was a scenic artist and worked for the Biograph Motion Picture Company, in New York. He lost his job, too, in the panic. Gorman and Horsley having nothing else to do but talk, talked about the moving pictures which were then just coming into general use and they decided to pool their interests and start in the moving picture business.

First thing they needed was a name for the business, so they took half of Gorman's name—the man—and half of Horsley's name—the horse—and as a half a man and half a horse is known in mythology as a Centaur, they called themselves the Centaur Film Company and started in.

Securing some lumber they covered the rear yard over with a wooden platform and on some wires overhead they strung muslin to diffuse the light. While Gorman was getting this ready Horsley with a jack knife and a screw driver and some sprockets from an old projector made a box and installed the parts and called it a camera and, as his own cameraman and director, started in making motion pictures. The first picture made by them was "The Cowboy's Escape," a one-reeler. One reel was enough at that time.

The Centaur Film Company had a hard struggle during its first three years of existence. One of the hardest things was to borrow money from their friends and relatives to buy film and pay other expenses.

About the end of their first year, or in 1908, a company was formed known as the Patents Company for the purpose of corraling all the patents then in existence pertaining to the making of motion pictures, the principal one of which was that known as the "Latham

Just as soon as the General Film began to operate they opened film exchanges in every large city in the United States and at once cut off the supply of all those who had been engaged in the film exchange business. Thus Miles Brothers, who operated an exchange in San Francisco and one in Los Angeles, in charge of Fred C. Dawes, were closed up. Bill Swanson, in Salt Lake City and Denver, was closed up. Carl Laemmle, in Chicago and Milwaukee, was closed. Charles Bauman and Adam Kessell and William Fox all were put out of the film business because they could not buy film.

Very soon they all arrived in New York to find out what was to be done about it. Someone said: "Why, there's a one-armed guy over in Bayonne named Dave Horsley making moving pictures. Better go see him," and one by one they went over to see the one-armed guy. Although he was very much like the proverbial one-armed paper hanger, he did not have the hives.

Realizing that he alone was not able to compete successfully against the Patents Company and the General Film he did all in his power to aid and assist those who were anxious to start producing pictures and took them in and showed them everything he knew about the business up to that time.

Carl Laemmle with Robert H. Cochrane formed the Independent Motion Picture Company and rented a whole floor in a building in New York and began to make one-reel pictures called IMPS. Bill Swanson, with Joe Engel and Ed Porter, started making the Rex Brand pictures. Bauman and Kessell sent Fred Balshofer out to Edendale and started to make the pictures known as the 101 Bisons. Mark Dintenfass, at Coytesville, New Jersey, started the brand known as the Champions. Edwin Thanhauser started a studio at New Rochelle, New York. Then came the Reliance Brand, then Ludwig G. B. Erb and Pat Powers came on with the Powers Brand and so on down the line, until the beginning of 1910 saw as many independent companies making pictures as there were in the trust. However, all was not milk and honey for the independents, by any means.

(Concluded in April Issue)

The Amateur Can Learn From the Professional

By WALTER BLUEMEL



THE most remarkable difference between the work of the professional and the amateur cameraman is not in the equipment used, but in the way it is used. The amateur today has at his disposal a variety of 16 mm. movie equipment which in perfection and versatility compares very favorably with the equipment used in Hollywood studios.

In principle, standard and sub-standard apparatus is very similar, differing essentially in size only. The smaller size, however, does not give it limitations which larger equipment does not have, but, on the contrary, makes it more versatile because of its light weight, as well as greatly cuts down the expense of equipment and film so that the amateur can afford it.

Though in the majority of cases simpler in construction, 16 mm. is made with the same mechanical precision that is to be found in standard equipment and, with the newest types of cameras, the numerous accessories and the modern high speed, fine grain panchromatic films available, there is no reason why the amateur should not in the majority of cases be able to get as good results as the professional.

It is very doubtful, however, if the average amateur gets the most out of his equipment. What is the reason for this? Certainly it is not because he does not have satisfactory equipment, time, money, or information necessary to get the best results.

In my opinion there are two chief reasons, first that most amateurs do not understand fully their equipment and how to use it (in spite of the wealth of information available) and, secondly, that many amateurs lack either the ambition, imagination, or ingenuity that makes the work of the professional cameraman outstanding. The fact that many prize winning pictures have been made with a minimum of money and equipment bears out the fact that these are not essential to get good results. In a recent national contest the award for photography went to a picture shot on an 8 mm. camera, for which a minimum of accessories are available at present. It is not the amount of equipment, but the expertness and ingenuity—one might almost say inspiration and genius—with which it is used that determines the quality of the result.

Many amateurs will never excel in their photography because they lack the interest, the ambition, to thoroughly learn the medium with which they are working. By the trial and error method they may eventually succeed in getting fairly good results, but their work will always bear the stamp of the ordinary amateur.

In spite of the simplicity of most 16 mm. equipment and the rules of composition and lighting, too many amateurs feel that motion picture photography is a difficult subject which requires years of study and experimenting to understand fully, and hence make little attempt to learn the basic principles so necessary to make good pictures consistently.

They become discouraged with their first results and, instead of trying to find out what is wrong, they blame everything but themselves, and soon lose all interest.

They fail to realize that a little time and money spent on studying the medium would soon more than repay itself in the results obtained and the film saved. With the amount of information available on motion picture arts and crafts the amateur has no excuse for making bad pictures.

I cannot hope to cover fully all the aspects that are necessary to consider in picture making, but I will mention briefly some of the things in which there is always room for improvement. It is hardly necessary to emphasize the importance of correct focus and exposure. Every amateur is told about this time and again. Focusing is merely a simple mechanical procedure which is simplified to the utmost on most sub-standard cameras, but, except in the case of universal focus lenses, it must not be neglected. Exposure seems to be the chief difficulty of the beginning amateur. The best way to get correct exposure, and in the long run perhaps the cheapest, is by the use of a reliable exposure meter, of which there are a number available. These are simple in operation and quite accurate and in most cases correct for the difference in cameras and films. Many cameras have an exposure guide on the camera, which if followed correctly gives satisfactory results under average conditions.

After the exposure meter and exposure guide has been used for some time it is wise to try to estimate exposure without their use. With some practice it is possible to estimate exposure quite accurately, and frequently it comes in handy when a meter is not available or when there is no time to use it. A great aid in judging exposure is a dark panchromatic viewing filter, which shows the lights in its monochromatic values (as the film would record it) and by cutting down the light makes it easier to judge the exposure in highlights and shadows. It is also a valuable aid in judging lighting and composition. Many professional cameramen use viewing filters, and also find exposure meters of considerable help because of the variety of lighting conditions which they encounter.

An understanding of the use of filters in photography is very important. Panchromatic emulsions have made the use of filters particularly desirable and in many cases indispensable. This is true, of course, only for exteriors, since filters are used in interiors only to obtain certain unusual effects. In most exteriors it is good practice always to use a filter when the light permits, especially for landscapes and scenes including considerable sky, for the proper filter will give a black and white color rendition more clearly like that perceived by the eye than if no filter had been used and, also, prevents a glaring white sky.

There are a great number of professional filters on the market which can readily be used with amateur cameras, should special filters for these cameras not be available. The choice of the filter depends, of course, on the effect desired, whether to correct or over-correct color value, whether to increase or decrease contrast, or whether to obtain night effects in daylight. Much in-

formation has been published on filters and the amateur would profit by obtaining some of it.

It must be remembered that a filter, because it cuts off much of the light passing through it cuts down the exposure considerably. The amount depends on the density and color of the filter. Each filter, therefore, has what is known as a filter factor, the number of times the exposure must be increased to get the correct exposure. The effect obtained with the filter can be changed somewhat by varying the exposure, particularly in the case of the red filters, where under-exposure gives a night effect because of the dark sky and the contrast in highlights and shadows, while slight over-exposure merely gives an over-corrected (that is, blues and greens are darker than normal) daylight effect.

It is well to know how to obtain these various effects, for they prove of considerable value in obtaining scenes which would be impossible for the amateur to get without using filters. If professional filters are available it is best to study their effect on panchromatic film by using a miniature still camera for which panchromatic film like that used in movie photography can be used. This is considerably cheaper and permits easier study of the result. The shutter speed should be practically the same as that in the movie camera so that an accurate comparison can be made.

Night scenes made with a filter in daylight can often be enhanced by the use of a diffusion disk or gauze (the latter can easily be made out of black gauze) which gives the scene a soft, diffused quality much like one finds on a moonlight night. Diffusion also has a number of other uses and is particularly of value in close-ups and other scenes which it is desired to soften in order to iron out harsh lines. Sometimes it is desired to soften only the background so that it will not detract from the center of interest in the foreground, a trick regularly used in professional pictures.

It is impossible to do this with universal focus lenses, where everything from five feet or so to infinity is in focus, but it can be done with focusing lenses by focusing critically on the desired object and opening the lens as far as possible so that the depth of field is reduced to a minimum. This increases the exposure, unless the light is such that the lens had to be used wide open anyhow, and to compensate for this increase the light can be cut down by a neutral density filter, which has no filtering effect but merely cuts down the amount of light reaching the film.

It can, however, be used in connection with color filters, providing the combined filter factor does not become too great. The 3N5 and 5N5 filters are a combination of the neutral density filter and the arco filter and are excellent for very bright landscapes. Fog filters used with certain neutral density filters give good fog effects even on a clear day. Since these filters are obtainable only in professional sizes it would be well for the amateur to equip his camera with a filter holder in which they can be used. The two-inch size is perhaps the most satisfactory, for it can also be used with most 35 mm. cameras and still cameras.

One of the greatest shortcomings in many amateur pictures is their unsteadiness due to the fact that the camera was held in the hand while photographing, instead of using a tripod. It is unfortunate that 16 mm. camera manufacturers advertise their product as essentially hand-held cameras for there are few persons steady enough to get good results by holding the camera while shooting. Too often the picture is so jumpy as to be unpleasant.

It is true that a tripod is somewhat of an inconvenience at times, but the improvement resulting from its use is well worth the extra trouble of taking it along. It makes the picture absolutely steady and enables the

cameraman to better line up his composition and obtain effective camera angles. Panning and tilting are very easy with a tripod and in most cases more satisfactory. Panning must, however, be slow and steady, otherwise an unpleasant blur will be produced, and should be used sparingly, preferably only when following a moving object or to show the relation of one subject to another.

Landscapes are best photographed with a stationary camera, for better compositions can be obtained in this way. Photographing from moving objects (trains, automobiles, etc.) is inadvisable unless the movement is reasonably slow and smooth, as that of a fairly large boat in calm water. Pictures taken from a moving automobile, unless it is very steady, are seldom satisfactory.

If it be desired to have a slow moving, or "truck-ing" shot, a camera truck can easily be constructed out of coaster, baby buggy, wheel chair, or tricycle wheels, which are strong enough to hold 16 mm. equipment and one or two persons. If a better truck is desired, it can be made out of automobile or airplane wheels (with tires), as is done in the studios. The truck must, of course, be made very steady, preferably be set very low, and must pull and push easily.

If the surface over which the truck is to travel is not smooth enough it can readily be made so by suitable boards. Trucking shots, like pans, should also be used only when there is a definite reason for them. There is really no reason why the amateur should not be able to obtain shots like the professional, for, with the exception, perhaps, of certain crane and "zoom" shots, the equipment used is relatively simple and, with a bit of ingenuity, can readily be made by the amateur.

Two other elements which are important to get good pictures are composition and lighting. Volumes have been written on these subjects, so I will not attempt to discuss them, but merely wish to emphasize their importance. After all, a picture consists merely of line, form, light and shade, and these can be pleasing only when properly arranged, so why ignore the importance of composition and lighting? Don't shoot at random just to have something to shoot, but carefully choose your subject and photograph it from the best vantage. It makes all the difference in the world how an object is photographed—some of the most commonplace subjects can be given new interest by clever lighting and composition.

Elaborate lighting equipment and sets are by no means necessary; it is how the available lights and sets are arranged that counts. The amateur should first acquaint himself with the basic principles of composition and lighting and then study the work of the professional, both in still and motion picture photography. He has much to learn from the professional. Much valuable information can be obtained from books and magazines like the *International Photographer*, but this, by all means, should be supplemented by a thorough study of photographic exhibits and motion pictures shown in theatres daily. They represent the best there is and the amateur can gain much from them. From the pictures shown in theatres he can learn lighting, composition, camera movement, camera angles, continuity and editing, special effects, and many other aspects which should give him a new source of inspiration for his own pictures.

The amateur is, in many respects, to be envied by the professional. He is his own boss—he may even write and direct the pictures he produces and photographs and he does not need to worry about overhead expense and box office. If he wishes to try something new there is no one to stop him—his facilities are unlimited. Yet with all this in his favor he seldom shows any originality, any ingenuity. He merely sits back and asks: "How can I get professional effects without professional equip-

(Turn to Page 26)

INTERNATIONAL CONTESTS FOR BEST AMATEUR FILMS

By SAMUEL T. SHAW, JR. (*Director "Cine Amateur"*)
Paris, France

Written for International Photographer



THE International Contests for the Best Amateur Films were started in 1931 by the Belgium Amateur Movie Club, "Union Belge des Cinastes Amateurs" (U.B.C.A.) in Bruxelles, Belgium. In this first Contest films were entered by the amateurs of Belgium, France, Holland and one or two other nations of Europe.

The first contest was won by Holland and their films were presented by the Holland Amateur Movie Club, "Nederlandsche Smalfilmiga" whose home club is in Amsterdam, Holland, and who have some fifteen or more branch clubs throughout Holland. Therefore, the Second International Contest was held in Amsterdam, in January, 1933, and amateur films from eight or nine European Nations entered, among which were Holland, Belgium, France, England, Yugoslavia and Austria.

To this contest France sent four films, two in the 16mm. classes and two in the 9.5mm. classes. (I was the official representative of the French Amateur Movie Clubs, the French Federation not yet having been started and the French National Contest in 1932 was held under the auspices of The French Amateur Movie Magazine "Cine Amateur.")

Two of these films, one 16mm. and one 9.5mm. took first prizes in their respective classes, the two others, a second prize and a third prize. Thus France won the Second International Contest and was to organize the Third International Contest, which was held in Paris, December 1933.

In this last contest there were seventeen Nations represented by over 60 films in all classes, 16mm., 9.5mm. and 8mm. or more than 33,000 feet of film. Not only were European nations represented, but also nations from other continents such as the U. S. A., the Argentine Republic and Japan who was the winner. Mr. Louis Lumiere, *Membre de l'Institut*, the well known French inventor and father of the Cinema, was Honorary President of this contest.

As a rule, each European country, holds every year, a national contest and the winning films are entered in the International contest. In most of the European countries, there has been formed a federation or an organization which acts as a representative as a whole for all the amateur movie clubs in that country, such as the French Federation of Amateur Movie Clubs, (F.F.C.C.A.) which was started in 1933 and the Holland League of Small Film Clubs, which was started several years ago.

In countries where there is no central organization, clubs which have already sent films to the previous International Contests, are selected as the Official Delegates of such countries, by the club where the coming International Contest is to be held. This is done so that only one film of each class shall be entered and, furthermore, to have all the films sent by one club on account of the question of duty and the "red-tape" which is necessary in order to have the films passed "duty-free" in the country where the International Contest is held.

For the last two International Contests, the Finance Ministers of both Holland and France have been so courteous as to allow films from foreign countries to enter "duty-free" to these contests, with the understanding that these foreign films will not remain in the country for

more than two months. (The question of an agreement between all governments to permit the exchange of Amateur Films without paying duty is one that should be taken up by all the amateur movie clubs, magazines and amateurs, so that amateurs in one country could see films of their foreign brothers without paying duty on such films, for the short time they might stay in any country.)

The films entered by the amateurs of the U. S. A. in the III International Contest, and which won third prize, were picked from the list of films designated by the American movie magazine, "Movie Makers", "The Ten Best" (See Movie Makers, Dec. '32) as there was not time enough to have a national contest in the U. S. A. before the films had to be sent to Paris. This is the first time that American films have been entered in any International Contest, but let us hope that there shall be films from the U. S. A. in all the following International Contests.

This continual increase in the number of films and also the increasing number of nations taking part in these International Contests shows that the amateur movie makers, the world over, are becoming more and more interested in comparing their films with those of their foreign competitors and let us hope that in the coming Fourth International Contest, which no doubt will be held in Tokio, Japan in 1934, under the auspices of the "Nippon Pathe Cine Association" that there will be films entered by amateur movie makers and amateur movie clubs the world over. As it is still early in this year, let the amateurs, all over the world, start planning their films which will be entered in their national contest, so that the very best films of each country in the different classes, such as photoplays, travel films, color films, etc., may be presented at the Fourth International Contest and may the best films win.

Winners and Runners'-up in the III International Contest for the Best Amateur Film. Held in Paris, France, December 1933. Under the auspices of "The French Federation of Amateur Movie Clubs" and "Cine Amateur."

16mm. Category A—Photoplays

1st Prize: Lettre D'Une Inconnue (Letter of an unknown), by Paul Cléva (C. A. C. F.) France.

2nd Prize: Cip Et Puc Au Pays Des Merveilles, by L. Erizzo. Italy.

16mm. Category B—Travel Films

1st Prize: Mountain Trip in Early Summer, by K. Tsukamoto. Japan.

2nd Prize: Sous Les Ponts De Paris, by G. Gronostayski (C. A. C. F.) France.

16mm. Category C

1st Prize: I'd Be Delighted To, by S. W. Childs, Jr. (A. C. L.) U. S. A.

2nd Prize: Camera Adventure, by P. Reynders. Holland.

8mm. Category A—Photoplays

1st Prize: Sang Chaud, by A. Duchesne. France.

8mm. Category C

1st Prize: Early Spring, by T. Okamoto. Japan.

2nd Prize: Technique, by W. Mills (A. C. L.) U. S. A.

9.5mm. Category A—Photoplays

1st Prize: Le Vagabond, by Miss Suzanne Guimard. France.

2nd Prize: Les Affaires Du Consul Dorgen, by O. de Miletic. Yugoslavia.

9.5mm. Category B—Travel Films

1st Prize: The Four Seasons in Japan, by K. Tsukamoto. Japan.

2nd Prize: De L'Hiver Au Printemps a Prague (From winter to spring in Prague), by The Pathé Klub of Prague. Czechoslovakia.

9.5mm. Category C

1st Prize: Fantaisie Revolution, by Umakichi Okano. Japan.

2nd Prize: La Riviere, by the Maxa brothers. Czechoslovakia.

Classing By Nations

Japan	8 points
France	7 points
U. S. A.	3 points
Czechoslovakia	2 points
Holland, Italy and Yugoslavia, each	1 point

Delegates were received from Belgium, Holland, Spain, Italy, Yugoslavia, Austria.

The IV International Contest will be held in Japan.

B. & H. Announce New Filmo Model 121

Bell & Howell Company makes the important announcement of a 16 mm. magazine-loading motion picture camera, light in weight, low in price, and rectangular in shape—entirely different in appearance from any camera previously made by this company, but embodying the traditional Bell & Howell feature of fine design and rugged, precise construction. This new camera has been christened Filmo Model 121.

The magazine-loading feature makes for instantaneous loading. You just slide in a 50-foot film magazine, close the camera door, and the camera is loaded.

Filmo 121 is only $2\frac{1}{4} \times 3\frac{1}{2} \times 5\frac{1}{4}$ inches in size and weighs about two pounds. It is beautiful in appearance with its rich dark brown leatheroid covering and polished plated fittings.

There are two viewfinders. One is a direct-sight finder (spyglass type) affording a large and brilliant field. The other is a waist level finder of the reflecting type used on still cameras.

Two speeds, 16 and 24, are provided for, as are single frame exposures. A downward pressure on the starting button puts the camera into operation at 16 or 24 speed, according to the setting of the speed control lever. An upward movement of the starting button exposes a single frame. This provision opens up many interesting possibilities in animation work.

A first quality Cooke 20 mm. F:3.5 universal focus lens is standard equipment. However, a Cooke one-inch F:1.8 lens, suitable for both black and white or Kodacolor movies, can be supplied, either with or without Kodacolor filter.

An exposure chart covering all outdoor light conditions, seasons, subjects, and hours of the day is built



into the new camera's side. There is an accurate film footage dial and a permanently attached, folding winding key.

The shutter is of a unique and distinctive type with oscillating action—motion picture's closest approach to the focal plane shutter of a still camera. This affords an unusual sharpness of image. The exposure time at normal speed is approximately one thirty-fourth of a second.

The price is also a feature—\$67.50 with 20 mm. F:3.5 universal focus lens. The case is \$7.50 extra.

THE ACADEMY PROGRAM

J. T. Reed, Academy president, recently announced the appointment of Samuel J. Briskin as chairman and Nathan Levinson as vice-chairman of the Research Council.

A meeting of the Council will be held during the next week to hear reports of the various subcommittee chairmen and to inaugurate activity on each of the nine projects which were interrupted until plans could be worked out with the producing companies for financing the program under the new Academy by-laws.

These projects and the chairmen in charge of each subcommittee are:

Establishment of an Effective Uniform Practice in Reel Length (1700 Foot Reel), J. M. Nickolaus; Revision of Standard Release Print, S. J. Twining; Improvement in Release Print Quality, L. E. Clark; Establishment of Uniform Screen Illumination in Studio Projection Rooms, Nathan Levinson; Development of a Silent Camera, Virgil Miller; Development of a More Efficient Use of the 35 MM. Film Area, Douglas Shearer; Correction of Distortion in Projection, John Livadary; Study of Economies in Recording, E. H. Hansen; Investigation of Film Preservatives, C. Roy Hunter.

THE ROLLEICORD CAMERA

It is a pleasure to call attention to the Rolleicord Camera, the latest product of the famous factory of Franke & Heidecke, makers of the Rolleiflex and Heidoscope Cameras.

This new camera has many of the features of the popular Rolleiflex, and the filters, Proxar lenses and many of the other accessories, are interchangeable.

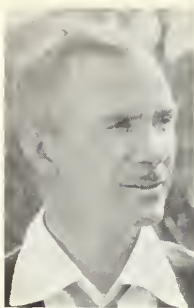
While the Rolleicord will retail for only \$62.50 (case \$7.50 extra) it bears out the well-known reputation of this factory for precision workmanship and beauty of finish and lines to the fullest extent. The unique metal finish of the camera, in silver and black, puts it in a class by itself.

THE MINIATURE NEGATIVE

Its Development and Care

By AUGUST WOLFMAN

Here is the newest book in print on the development and care of miniature negatives. Every miniature camera enthusiast will want a copy because it contains the latest and most up-to-date information on this subject obtainable. There are chapters on Developing, Intensification and Reduction, Care and Handling and special information treating the characteristics of various cine film and roll film. A section is devoted to Physical Development which alone is worth more than the price of the book. Many pages of formulas, diagrams, charts and illustrations. Price 50 cents.



THE MATHEMATICS OF MOTION PICTURE MINIATURES

By PAUL R. HARMER

THE mathematics used to build and set miniatures is not generally known. Most of the layout and plans are privately made, the principles employed are closely guarded as secrets, although in reality the system is based on the mathematical invention called proportion. Many fine examples of the art of miniatures, full size and process photography have been accomplished. Some of the problems are very intricate and complex, others are less so, and easily understood with very little explanation necessary.

It is almost impossible to give proper credit to the host of cameramen, artists, architects and mechanics who have made possible the gigantic spectacles which pass before your eyes as if they had actually taken place. Hardly a picture leaves Hollywood but some part of it has been helped by miniature and process.

When the production office decides that the construction of a large building cannot be undertaken because of the budget and in the second place there isn't room to build it, and in the third place it isn't necessary to build all of it, because part of it can be built in miniature thereby saving money, time and space, the job is handed to the art department which immediately calls in the miniature chief and they both talk it over with the director. Between the three of them they decide how much of the full size building is necessary for the action, the rest of the building to be made in miniature and matched in.

The first problem is selecting the proper lens which

cause corresponding parts of similar triangles prove this.

Therefore $F = \frac{W_1 D}{W}$. See Illustration No. 1.

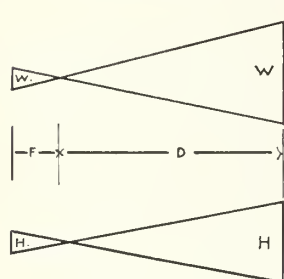
$F = 1.6$ inches, which is mighty close to a 40 mm. lens. Checking the height of the building which is 38 feet 2.4 inches, we find that this lens gets our height and gives us plenty of foreground for action.

The director has already decided that 16 feet in height will give him plenty of room to take care of the usual street traffic such as busses, cars and pedestrians, so the miniature department knows they have only to supply the top 22 feet 4.8 inches.

The scale, the miniature is built on, is the next step. First we must decide how far from the camera we should set the miniature for convenience to the cameraman. We find that 12 feet will give him the distance necessary to closely match in the lines and also give the electrician room to set and manipulate his lights. We will then decide that 12 feet is all right. Using Formula No. 3,

$S = \frac{N}{D}$, the scale proves to be $S = \frac{12}{144} = S = \frac{1}{12}$ of a foot, which is one inch. Therefore, the 1-inch scale is correct and the miniature will be built 1/12 of the full size.

The next condition to be considered is how high from the floor should the miniature be set. In the drawing (see Page 9) you will see that the full size structure



PICTURE APERTURE .868 BY .631 INCHES

$W_1 =$ APERTURE WIDTH

$W =$ FIELD WIDTH

$H_1 =$ APERTURE HEIGHT

$H =$ FIELD HEIGHT

$F =$ FOCAL LENGTH OF LENS

$D =$ DISTANCE FROM LENS

$$\frac{W_1}{F} = \frac{W}{D} \quad \leftarrow \text{FORMULA No. 1}$$

$$\frac{H_1}{F} = \frac{H}{D} \quad \leftarrow \text{FORMULA No. 2}$$

$$\frac{.868}{1.575} = \frac{W}{144 \times 12}$$

$$W = \frac{933.9''}{12}$$

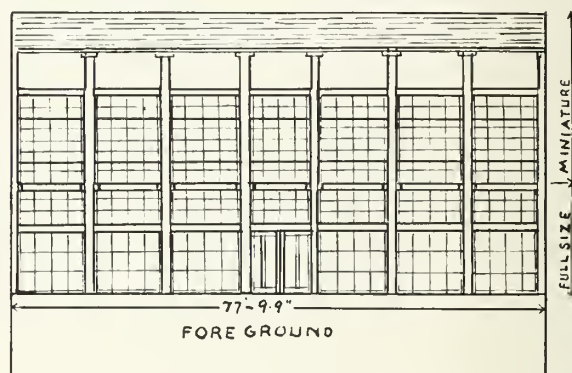
$$W = 77'-9.9''$$

$$\frac{.631}{1.575} = \frac{H}{144 \times 12}$$

$$H = \frac{628.8''}{12}$$

$$H = 52'-4.8''$$

Fig. 1



will take in the required spread of the building. Most of these shots are made in the stage and 150 feet is about the average size allowed because of the crowded conditions prevailing in most studios, so to begin with we have a set with a front of 77 feet 9 inches. Now what lens can we use in 150 feet? Some room must be allowed around the camera and light platforms must be set behind the full size, so we have only 144 feet left.

Formula No. 1 shows us $\frac{W_1}{F} = \frac{W}{D}$. This is true be-

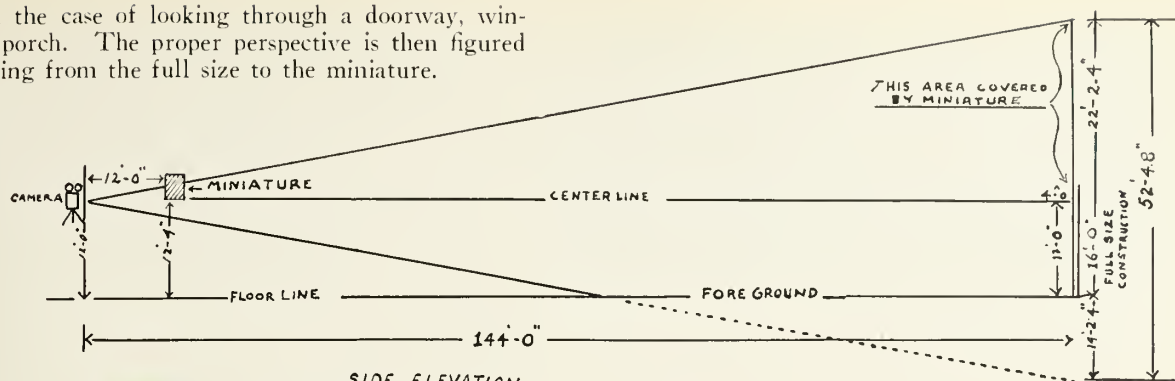
is built to a point four feet above the center line of the camera lens. As we are working with the 1/12 foot scale, we will take 1/12 of 4 feet, which is 4 inches. The miniature is then set 4 inches above the center line. In this case the center line parallels the floor and we have in all 12 feet and 4 inches from the floor.

The final test in setting of all miniatures is done by looking through the camera and aligning the adjoining parts, then running a short test through the camera. The print from this film is carefully watched in the projection room for errors in alignment, painting and lighting.

The five formulas given here, with their various transitions, can be applied to many other cases.

The next problem dealing with full size structure and miniature is when the miniature lies beyond the full

size, as in the case of looking through a doorway, window or a porch. The proper perspective is then figured by measuring from the full size to the miniature.



SIDE ELEVATION

S = MINUTURE IN FRACTIONS OF A FOOT
D = DISTANCE FROM LENS TO FULL SIZE IN FEET
N = DISTANCE FROM LENS TO MINIATURE IN FEET

No. 3 → $S = \frac{N}{O}$ $N = \frac{1}{12} \times 144'$
No. 4 → $D = \frac{N}{S}$ $N = 12'$
No. 5 → $N = S D$

Fig. 2

For instance, we are photographing an interior. Through the open doorway we should see a certain group of buildings which, according to the locale of the picture, would be 600 feet distant. Owing to small stage room and lack of space we have only about 30 feet in which to set the miniature, using Formula No. 5, $N = S D$. N = distance in feet from open doorways to miniature. S = scale of miniature in fractions of a foot. D = distance from doorway to full size of original buildings.

We will now try the $\frac{1}{2}$ inch scale and see how it works out. $N = \frac{1}{24} \times \frac{600}{1}$. $N = 25$ feet.

We now know we can build the miniatures to the $\frac{1}{2}$ inch scale and set them 25 feet distant, from the doorway to the nearest miniature and have the proper perspective.

This same system can be applied to other groups of miniatures in a combined shot; they can all be built and set according to the above system.

When photographing miniatures not in the same shot with full size, this makes the layout a matter of building to any desired scale, and that alone, and setting the camera wherever desired for the perspective and composition.

It is well to mention here, that the speed of moving miniatures, should be measured in the same ratio as the scale to which they are built.

The next problem to be considered is that of a projected background. In this case we have a tree 100 feet high which we wish to project on a screen 25 feet from the camera lens. The proper size of the projected image should be considered. To find out accurately we can proceed as follows:

Let S = height of projected image.

$N = 25$ feet = distance from the camera lens to the screen.

$O = 100$ feet = height of the object.

$D = 250$ feet = distance from the camera lens to the object.

$$\frac{S}{N} = \frac{O}{D}$$

$$S = \frac{O \times N}{D}$$

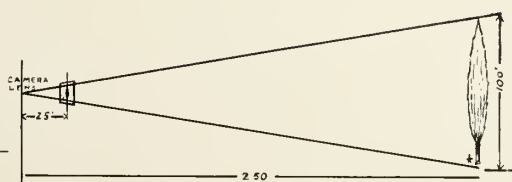
$$S = \frac{100 \times 25}{250}$$

$$S = 10 \text{ ft.}$$

Ten feet is the height of the projected image.

See Fig. 2.

We will now take the problem of giving a desired



perspective to this same tree and man beside it, the same formula works, except we transpose it.

$$\frac{S}{N} = \frac{O}{D}$$

Let $S = 4$ ft.

$N = 25$

$O = 100$

$D =$ perspective, or distance.

$$D = \frac{25 \times 100}{4}$$

$D = 625$ feet. This is the effect it will show in the background.

As a rule most process cameramen are satisfied to trust their eyes to give them the proper size and let the perspective take care of itself. Excellent eyesight and years of experience help them to do this without any trouble. But when in doubt, it's nice to have the rules of mathematics to settle an argument.

To the readers who want to try a new system, on depth of field for a selected lens, we will take the problem of the hanging miniature and work out the lens stop and distance to be focused on for sharpness of field, the accompanying diagram will illustrate the fundamentals. (See Page 10.)

$x = 144 \times 12'' = 1728$ inches = far distance

$y = 12 \times 12'' = 144$ inches = near distance

$f = 1.575$ inches = focal length of lens

$d = .002$ inches = circle of confusion

$S =$ stop number

$D =$ distance focused on

First we will solve for the proper stop which will bring in these separated points sharply, using a circle of confusion of .002 of an inch; and using the following formula which is stated in terms we already know:

$$S = \frac{f^2 (x-y)}{2yxd - fd (x+y)}$$

Substituting in the values we have:

$$2.48 (1728 - 144)$$

$$S = \frac{2.48 \times 144 \times 1728 \times .002 - 1.575 \times .002 (1728 + 144)}{1.575 \times .002 (1728 - 144)}$$

$$S = 3.97$$

which for practical purposes we can use stop $f:4$.

Now we must find out which point to focus our lens on, to get best results.

Using the following formula:

$$D = \frac{f^2 (x-y)}{dS (x+y)} + f$$

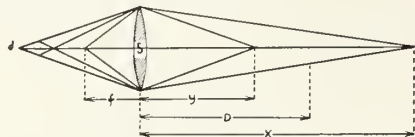
Substituting values we have:

$$D = \frac{2.48 (1728 - 144)}{.002 \times 4. (1828 + 144)} + 1.575$$

$D = 263.8$ inches, reducing this to feet, we have

$D = 21$ feet 11.8 inches

By using a larger circle of confusion .003 of an inch, the miniature and full size building will be soft focus, while the middle distance will be critically sharp, this slight change in the circle of confusion figures the stop at $f2.6$ and $D = 22$ ft. 6.5 inches.



In order to complete this particular series of equations

and to make it possible to double check one's figures, as well as compute for other unknowns I will introduce two more formulas which are as follows:

$$x = \frac{f^2 D}{f^2 - ds (D - f)}$$

$$y = \frac{f^2 D}{f^2 + ds (D - f)}$$

Glancing at the diagram you will notice that you can now definitely vary distances and values to suit the requirements.

Good luck, friends.

I wish to take this opportunity to thank my next door neighbor, Paul E. Wylie, former instructor of mathematics for the United States Army.

STILL HOPE FOR STERO.

By W. WALLACE CLENDENIN

From the earliest days of the motion picture experimenters have worked steadily to give it sound, color, and three dimensions. Sound and color we have had for some time, but the problem of stereoscopic projection is, commercially at least, still unsolved.

Photographing a stereoscopic motion picture presents no difficulties, and there are several known methods of projecting the finished print. It is unfortunate that each of these systems for viewing the picture has some drawback that makes it unsuitable for general use.

A true stereoscopic photograph consists of two pictures, one for each eye, taken from slightly different viewpoints, just as each of our eyes view objects from slightly different angles. The basic principle of such photography is simple; each eye must see only the image intended for it; if we print the images on top of each other, or by any other means permit both eyes to see the same picture, there is no stereoscopic effect.

Some years ago, two youthful experimenters came to one of the major studios with the glad tidings that they had the stereoscopic problem in the bag. They were given the run of the lot and the use of anything they wanted in the way of equipment, for two weeks, at the end of which time both they and the studio were both sadder and wiser.

Their "solution" to the problem was the crudest and most mistaken one possible. By the use of prisms in front of the camera lens, they photographed a right and left image superimposed on the same negative. There was no way of separating the two images, and the only visible result was a double outline effect.

Some years ago, the Educational Film Co. released two or three stereo pictures made by the anaglyphic method. In this, the image for one eye is printed in red, the other in green; when viewed through a pair of spectacles having one lens red, the other green, each eye sees only the image intended for it. An advantage of the anaglyph is that it is possible to make the picture apparently project out from the screen, and the Educational Co. made the fullest possible use of this feature. One shot in particular nearly wrecked the theatre. This was a study of a boy with a hose; when he turned the hose on the camera, the audience leaned backward so rapidly they almost ripped the seats off the floor.

There are three disadvantages of the anaglyphic method of projection. First, the necessity of using the red and

green viewing screens by the spectator. Second, the great loss of light from the heavy colors. Third, the fact that an anaglyph does not give true roundness, but instead a series of spaced plane images, making figures appear flat as if cut from cardboard.

Other methods of stereoscopic projection give better results, but are out of the question for large audiences. Two examples are the use of synchronized shutters for the projector and spectator, and projecting and viewing with polarised light.

A man who has lost the sight of one eye cannot see stereoscopically at any time, but he can get a fair approximation of it by moving his head from side to side. This also applies to the motion picture camera, and has been the subject of experiment for the last thirty years or more.

In 1910, the old Urban-Eclipse Co. made a picture "A Trip Down the Rhine." All of it was shot from a moving steamer, and was billed as "The Urban-Eclipse method of stereoscopic photography." More recently, inventors have been using moving prisms or mirrors in front of the lens, instead of moving or oscillating the camera.

At best the stereo effect obtained by moving the camera or lens is limited. Also, the movement of the image is always noticeable to a more or less degree. However, since there are no spectacles to be worn, no shutters to be synchronized, and no special screens required, this method certainly invites further experiment.

If stereoscopic photography is ever brought successfully to the theatre screen the cameraman will find a whole new bag of tricks at his disposal—and will find that some of his old ones are no longer of much value. Projection backgrounds, for example, may have to go overboard, depending on what method of stereo projection is used.

The attempt to light sets so that they present roundness will not be so necessary; in all probability satisfactory results may be obtained by using considerably fewer lights than at present. A set crowded with furniture is not very desirable under present conditions, but as a stereoscopic shot may be quite effective. "Wings", "Hell's Angels", and other similar air pictures would have gained tremendously by the use of stereoscopic photography.

Too little attention has been given by the larger studios to the possibilities of the stereo picture. No one can say positively that stereoscopic projection can never be attained commercially, and as long as this is true, experiment along this line should be continued.

The Newsreel World

By RAY FERNSTROM

Murder With Lights

DURING the last three years out here in Hollywood I've been studying composition, lighting and filtering. Now I'm going to pass on to you newsreelers a few pointers.

The most needed advice I can give right now is in regard to lighting. If ever "murder with lights" applied, it does to newsreel lighting with incandescents. Before I go further, let me point out that I fully appreciate the fact that you newsreelers are handicapped. Yes, I realize that, with the composition, often five or six cameras are set up and forced to shoot with only four or six "lights."

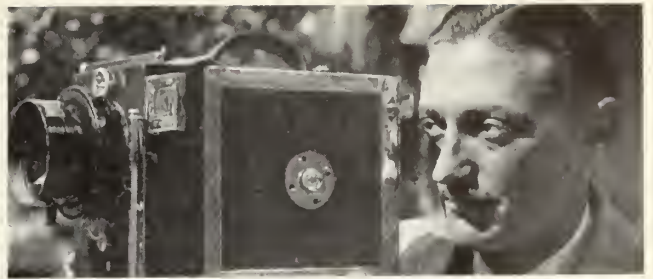
It has been a practice for years to hand newsreel men what were seriously called "lights." A globe in a dishpan set on a fiddler's music stand comes close to a perfect description of these. The idea of "flooding" or "spotting" a newsreel light never occurred to anyone buying news lights.

Now for the handling of these in everyday coverage. We set up our cameras, set up our lights and each one of us tries to get a "lot of light" on the subject.

What's the result on the screen? A flat picture, flat subject, flat background, hard light and black shadows that make babies look like character actors.

Why murder folks with lights in the newsreels? There is no excuse for it, even with the present "lights." It's about time newsreel men used their heads in placing lights and it's about time better lighting equipment be supplied. With but few exceptions news men have never used hard, soft and spotted lighting in coverage of subjects requiring artificial light.

Here's the solution: Use hard lights on one side of the face or faces of your subjects. By hard light I do not mean hot or close lights, the way you have been doing. Now, for the second light or lights—set them on the opposite side of your subject, but make this or these soft, either a weaker light, a spread light, or place farther from your subject. Use all lights *high*, higher than the height of your subject.



Simple enough? O. K. Now for the separation of your subject from your background. Add a soft light to your lighting equipment. Get one that you can spread or spot so as to cover one or more people. Use this very *high* in back of and above your subject from the side. Shoot it straight down on the heads and shoulders of your subject. That's all. Of course if you wish to continue and one of the competition has an extra light, use this on your background, flooded.

That's a simple enough explanation of studio lighting in its elementary form, isn't it? Now if you care to further revivify your subject, put on a nice light diffusion glass. You'll be surprised at the improved results. To gage your amount of light, let me strongly recommend a Weston meter. They all use these out here and results talk.

I know full well that many of you are going to read this, throw the *International Photographer* on a shelf and forget it. For the few who follow me, results will reward them and it is for the boys who try to improve that this is written. If I can help, just drop me a line. We have a lot of little tricks out here and we strive to please. Just today, thinking about the lights, I looked over the stock of lights at the Camera Supply Company. Why, for ten dollars you can add a peach of a "spot" to your array of news lights.

As to the Weston meter, let me recommend the Universal model for news men. This gadget uses a photo cell that has a needle pointing *direct* to the F. stop to be used. Ask the man who sells you one to set the needle for the kind of film you use, and today that should be Super. This Universal model meter can be used with the same accuracy of incandescent lighting by merely opening up on one more stop than shown, or adding enough lights to make the meter reach another stop—stronger light—efficient.

In closing, let me repeat, drop us a line and let's hear whether or not we have been or can be of service. Skol.

THE FLYING SWEDE.

SCENARIZED FILM PLANS FOR 16 MM.

The Amateur Cinema League, Inc., through James W. Moore, ACL., has issued Book I, of "Scenarized Film Plans," a clever and most useful brochure of 32 pages, which is just what its title sets forth. In the booklet four selected film plans, completely scenarized, are presented all ready for production.

Says Mr. Moore in the introduction of the book: "The presentation of essentially stock scenarios is a new departure in the League's service to members. It was long felt at headquarters that the needs and facilities of no two League members could be exactly the same, and that, in view of this fact, even the most general of prepared scenarios would be out of line with these needs at some point or another of its course. The strength of this feeling has been increasingly weakened, however, by repeated member requests not only for plot ideas but for plot ideas in scenario form. This booklet is the first

part of the League's answer. A second series of scenarized film plans is already in preparation and if the two books seem successful they will be followed by others."

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MINIATURE CAMERA PHOTOGRAPHY

Notes on Enlarging

By

**Augustus
Wolfman**



ENLARGING is of course resorted to by the miniature camera worker, for contact prints from the tiny negatives are not practical for average use. Many miniature camera photographers have prints from their negatives made by photo-finishers, thereby depriving themselves of one of the most enjoyable phases of this hobby.

Enlarging his own negatives allows the photographer to exercise control over the final results, in the composition, selection of the printing paper, etc. Many negatives include much subject matter, which if all included in the print does not produce interesting results.



Firemen at work: Made with a Leica camera, Hekto f:2.5 lens; 1/60 sec. at full diaphragm opening.

A portion of the same negative properly composed and enlarged, may yield a print of salon quality. A photo-finisher cannot be expected to select portions of a negative for printing. His selections may not coincide with that of his customer.

It is evident that the miniature camera enthusiast who desires individual results in his prints, must produce them himself. The first requisite to the work is a suitable enlarger, one that is specifically built for enlarging miniature negatives. Such enlargers have optical systems designed to minimize defects in the small negative. They are also equipped with short focal length lenses to enable reasonable sized enlargements to be produced. We could not very well use an enlarger which accommodates 5x7 inch negatives, and which possesses a lens of about five inches focal length. Although the small negative can be masked off and inserted into the enlarger, its five inch lens would not allow enlargements of reasonable size. The market at present offers quite a variety of reliable projection apparatus amongst which are included the Valoy, Foth Derby, Valfa, Varyl, Filoy, Brooks Rajah, Vertex, Praxidos, Mirette, Baby Miraphot, etc. All of these enlargers are precision designed, and give perfect satisfaction.

Most of these enlargers are provided with glass negative carriers, consisting of two pieces of optically flat glass hinged at one end. These carriers should be cleaned with the same care as lenses, employing either lens tissue or soft chamois skin. It is evident that any scratches imparted to the carrier will show up in subsequent prints. The other part of the enlarger will also have to be cleaned to insure that the negatives are kept

free of dirt. This is especially true in the case of enlargers possessing film wings, which seem to have a pronounced affinity for dust. A small camel's hair brush will be found to be a handy tool in performing this work.

Cleanliness cannot be too strongly stressed in miniature camera photography. It is really a necessity for sloppy methods will invariably be productive of poor results.

After the enlarger has been thoroughly cleaned it will be necessary to submit the negatives to a similar treatment. They should first be wiped with a chamois which has been soaked for a considerable time in carbon tetrachloride. If the negatives are kept in rolls, the moist chamois is folded and the roll of film passed between the folds. Individual negatives, or strips of two or more negatives are laid upon clean, white paper and one side cleaned at a time. Each small negative is then carefully examined, with the aid of a magnifying glass if necessary, and any particles of dirt which are still adhering removed with a camel's hair brush. If water marks or other smudges are still present another carbon tetrachloride treatment is called for.

We are now assured that avoidable print marring influences have been eliminated.

A puzzling factor to the miniature camera photographer is the choice of paper to use. Papers are divided into three classes, chloride papers, chloro-bromide papers, and bromide papers. The latter is the fastest of the three, and is generally employed in enlarging. Chloride papers are the slowest being used in contact printing, and therefore usually designated as contact paper. The speed of chloro-bromide paper falls between that of chloride and bromide papers. An idea of the relative speed of these papers can be had from the following table of comparative exposures of Agfa papers. Of those mentioned, Brovira belongs to the bromide class. Indiatone is of the chloro-bromide type, and Noko is a chloride paper.

Comparative Exposures of Papers

	Exposure in Seconds
Brovira Soft - - - - -	3
Brovira Medium - - - - -	4
Brovira Hard - - - - -	5
Brovira Extra Hard - - - - -	10
Indiatone - - - - -	30
Noko Soft - - - - -	1200
Noko Brilliant Soft - - - - -	1500
Noko Medium - - - - -	1800
Noko Hard - - - - -	2800

The vast difference in speed between bromide and chloride papers can be seen at a glance. One must not construe from the above table that exposures such as 1200 seconds or 600 seconds are recommended for the papers under consideration. These figures merely repre-

(Turn to Page 20)

Announcement!

The Brulatour Bulletin, published for more than two years in the leading Cinematographers' publications, was discontinued a few months ago because we felt that the field had been completely covered.

Meantime, scores of cameramen have asked us to resume publication of The Brulatour Bulletin.

Heads of camera departments at practically every major studio have made the same request.

Very recently we have received similar requests from studio production executives who found The Bulletin most helpful in identifying the cinematographers associated with important productions throughout the industry, during actual production period.

At its inception, The Brulatour Bulletin was frankly a publicity feature, designed to extend the service and good-will of Eastman Kodak Company and J. E. Brulatour, Inc., Distributors of Eastman Films.

It proved to be more than that.

It developed into a barometer of photographic activity—closely observed by cameramen, their immediate department heads and top executives alike. This because it was always dependable, reliable, informative and briefly to the point.

Therefore, Eastman Kodak Company and J. E. Brulatour, Inc., will extend this vital service and henceforth will publish The Brulatour Bulletin each Monday as a feature of The Hollywood Reporter.

First issue Monday, March fifth—every Monday thereafter—Read it.

It will interest the industry.

J. E. BRULATOUR, Inc.

EDITORIAL

(This editorial is written by request. It is made up of excerpts from an article written by Mr. Pysioc and published in the official publication of the Cinema Camera Club of New York, in 1913. This was the first organization of cameramen in America, if not in the world. It was brought about through the efforts of Mr. Pysioc, and almost all the surviving members of the old Cinema Camera Club hold cards in the International Photographers. The Cinema Camera Club held its first meeting at Henebund Hall, 267 West 34th Street, in New York City, April 6, 1913. Thirteen cameramen were present.—EDITOR'S NOTE.)

HANGING TOGETHER

By LEWIS W. PHYSIOC

SOME idealists have said: "The depression has brought men closer together." It has. It has brought men together in a vicious grapple for existence. Hungry dogs fighting for a bone; wild carnivora clawing and gnashing at the carcass between them until the stronger tears it away and secures it with its heavy weight, snarling and pawing at all the hunger pack that approach.

That is not a pretty picture when we use it to associate man (God's noblest creation) with nature's law, "the survival of the fittest."

It is not a very prideful picture, but it is true. The question arises: What has man gained from thousands of years of cultural development and intellectual exaltation if, in one of his greatest emergencies, he can solve the problems of the day only by suddenly invoking the cruelest law of nature,—the survival of the fittest?

Clearly then, our hope lies in the more magnanimous philosophy of the incident if civilization shall survive the purely animal tendencies of man; and this can be accomplished only by social unity—the strong pledging support of the weak.

Shopenhauer says: "No man is so formed that he can be left entirely to himself to go his own ways; and if you desire to get on in the world, friends and acquaintances are by far the surest passport to fortune."

Of course, we admit the intellectual recluse has his arguments and it is difficult to approach him with an idea so broad and democratic as a society pledged to mutual aid and co-operation.

It must also be conceded that the greater the ability and the more profound the intellect of men, the more remote and isolated from their fellows they become and the more justified they may appear in assuming themselves more deserving of the fruits of their endeavors; claiming this right in a world of equal opportunity. But let us not overlook the fact that it is the abuse of this principle that has brought us to our present pass. No matter how justifiable this may appear, it furnishes an element of selfishness in structure of society and is the great deterrent in the progress of civilization. Many of their fellows may be benefited by their society without loss of prestige to that more favored class. A great mind is like the magnet that has the power of radiating energy without itself being weakened.

Furthermore, we can never accurately measure our power to do or think until we have mingled with the masses, and we cannot keep a just record of our own progress save by comparison with the activities of others. If our philosophy is to be proved, it must be tried by an intimate association with men.

History has given us a picture of old "Socrates wandering the streets of Athens, in all weathers, at all hours in the crowded market places and in the work shops, wherever men were gathered together; incessantly asking and answering questions," developing an intellect that won him many disciples, among his *inferiors*, and the respect and friendship of men like Alcibiades, Euripides, Aristophanes and others—his supposed *superiors*. But old Diogenes, on the other hand, would not forsake his tub for the friendship of Alexander and was ever jealous of the shadow of a great man.

What a privilege, too, it must have been to frequent the old coffee house, where gathered together such men as Goldsmith, Burke, Fox, Garrick, Reynolds and Gibbons and where Dr. Johnson condescended his presence, "and even the pestiferous Boswell was tolerated." How freely those men swapped ideas, aided and encouraged each other. There was no need, in that assembly, of suspicious copyrights and other protective measures—they gave freely and received much.

Coming to more modern times, we may consider the effect of The Royal Academy, for example, has had on English painting, or the National Academy and other artistic circles, on American art. The many literary, musical and scientific circles had aided wonderfully in maintaining that line between cultured man and the brute.

The history of the American Stage is well nigh inseparable from those of such clubs as The Players, Friars, Lambs, Green Room and others.

And here in our fair field of Motion Pictures we have The Producers Association, Academy of Motion Pictures Arts and Sciences, Electricians, Sound Men, other various crafts, and *Cameramen*. But consider this earnestly: If these societies are organized and operated merely to secure to the favored the benefits of their positions, to the exclusion of the less fortunate, then they are failures and encourage a reversion to the more material and ignoble idea of the survival of the fittest; but if they are devoted to the advancement of the art and the mutual welfare of all concerned, then we need have little to fear from such transient things as depressions and local business slumps.

RECRUDESCENCE OF THE WONDER BOX

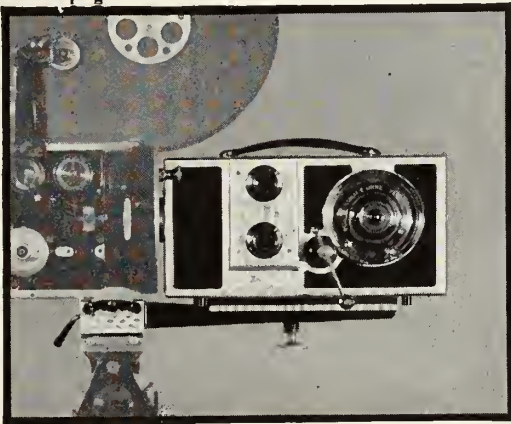
Silas Edgar Snyder,
Editor International Photographer,
Hollywood, California.

In reply your wire report that Wonder Box Corporation on rocks altogether erroneous stop Same no doubt propaganda instigated by one George Mitchell stop Wonder Box Corporation better condition financially than ever before stop Your interest in us most gratifying stop Realize your interest not altogether casual considering amount we are in arrears for advertising stop Rest assured this matter will be taken care of immediately depression is over stop Your report relative to eighteenth amendment to Wonder Box correct stop Wonder Box now dispenses both alcoholic and non-alcoholic beverages stop Beverage dispensary located near processing tanks stop Near fatality occurred when assistant employed on Wonder Box leased to N.G.M. Company opened drain faucet on developing tank thinking it one on Old Taylor tank stop Developer developed interior complications due to the presence of sulphuric acid stop Flowers would have been in order had assistant not been a Swede stop Amendments to the Wonder Box now being made at the rate of one a month stop The nineteenth amendment is a Register-Meter which obviates possibility of crew working overtime or the prescribed hours without pay stop Entire equipment locks automatically and photographing can continue only after Company cashier has deposited quarter in meter stop. The twentieth amendment consists of at-

tachment for photographing Fourth Dimension stop Perfecting of this attachment entailed immense amount of research into the metaphysical and cosmic regions as the Fourth Dimension is invisible stop The human ego had to be taken into consideration also stop Necessity for inculcating equipment which would allow of photographing without illumination was due to frequent failure of Juicers to carry paid up cards and misunderstanding between Juicers and Producers stop From tests made during the recent misunderstanding it was impossible to distinguish scenes made with usual illumination from those made in Fourth Dimension stop Negotiations now under way whereby A S C A will insist on General and Major companies using Wonder Box equipment exclusively in their FIVE YEAR PLAN stop Crew necessary to operate Wonder Box at present consists of thirty-six men stop Twelve cameramen—twelve assistants—six process men—two sound technicians—two still men and two electricians stop No lighting supervisors necessary as all angles wanted by Director are photographed stop Thus minimizing usual arguments between Director and Light Supervisor as to which constitutes best angle to photograph stop Please explain more in detail your reference to codes stop Wonder Box was designed to operate on but one code—the Morse Code stop Sending this collect as I have run out of blank Promissory Notes stop Would have made it a Night Letter, but expect to be out of town tonight.

JOHN LEEZER.

THE B & H Cooke Varo Lens



B & H Cooke Varo Lens in photographing position on the Bell & Howell Camera.

The B & H Cooke Varo lens, for photographic "zoom" effects, gives the highest quality of definition and operates with great ease. Long awaited by the ciné industry, the Varo lens is daily carrying out every demand made upon it in leading studios. At F 3.5 the range is from 40 mm. to 50 mm.; at F 4.5 from 40 mm. to 85 mm., and at F 5.6 and F 8 the full "zoom," from 40 mm. to 120 mm., is obtainable. Adjustable stops provide for limiting the "zoom" as desired. One crank controls all moving parts. The iris is varied automatically with the focal length to keep the *f*/ value constant. Close focusing is done with auxiliary lenses. Write for full details. Sometimes available on rental to responsible studios in this country.

B & H Cooke F-2 Speed Panchro Lenses

The efficiency and success of B & H Cooke F 2 Speed Panchro Lenses, which are corrected for the blue and red rather than blue and yellow rays, has caused their almost universal adoption in leading studios. Made in eleven focal lengths, from 24 to 108 mm. B & H Cooke F 2.5 Panchro Lenses, at considerably lower prices, meet many needs where their speed is adequate. Seven focal lengths from 35 to 162 mm. Write for details and prices.

BELL & HOWELL COMPANY

1849 Larchmont Ave., Chicago; 11 West 42nd St., New York; 716 North La Brea Ave., Hollywood; 320 Regent St., London (B & H Co., Ltd.). Established 1907.

CARRYING HOLLYWOOD TO LONDON

At a recent meeting of the British Kinema Society, in London, our own Lloyd Knechtel, for many years in charge of the special effects department at R-K-O, read a paper on "Trick Photography" which was accompanied by the screening of reels of film in which trick photography and optical printing were explained, says the London *Kinematograph*.

Mr. Knechtel showed the various methods employed to overcome difficulties—optical printing, process photography, miniature work and glass painting.

Mr. Knechtel then introduced Ned Mann, who has come over from Hollywood to handle the problems of H. G. Wells' "The Shape of Things to Come," for Alexander Korda.

Mr. Mann soon had his audience roaring with laughter over his experiences on some big pictures, these being recounted in a dry, laconic manner.

His most successful story was that of making mechanical bulls for "The Kid From Spain," to act with the real Mexican bulls in the picture. Eddie Cantor wanted four bulls and kept changing his mind regarding what he would do with them, until Sam Goldwyn, exasperated, said: "See here, Eddie, you make me laugh with one bull—that'll do."

Work on "Noah's Ark," when levers were pulled too soon and cameras swept away in the resultant flood; building up sets of New York with the Chrysler and Empire Buildings in one shot; complaints that skyscrapers were in the wrong place; two dozen liners and 200 barges and the sets put on railway lines to give the idea of the sliding of the city into an abyss were recounted.

Following screen demonstrations, Mr. Knechtel resumed his talk, explaining how the effects were achieved and mentioning a big battle scene which was acted by only 15 men.

A member, rising to propose a vote of thanks, said he had been astounded by the perfection to which the tricks he had practiced 25 years ago were brought.

METRO-GOLDWYN- MAYER

"TARZAN AND HIS MATE." Producer, Bernard Hyman; screenplay by J. K. McGuinness; adaptation by Leon Gordon; first cameraman, Clyde De Vinna and Sid Wagner.

Cast: Johnny Weissmuller, Maureen O'Sullivan, Neil Hamilton, Doris Lloyd, Frank Reicher, Paul Cavanaugh.

"OPERATOR 13." Producer, Lucian Hubbard; from the original story by Robert W. Chambers; screenplay by Harvey Thew and Zelda Sears; first cameraman, George Folsey.

Starring Marion Davies and Gary Cooper.

"HOLLYWOOD PARTY." Producer, Harry Rapi; director, Alan Dwan; music, Rodgers and Hart, Brown and Freed; first cameraman, Hal Rossen.

Cast: Jimmie Durante, Lupe Velez, Jack Pearl, Laurel and Hardy, Polly Moran, Charles Butterworth, George Givot and others.

"THE SHOW OFF," starring Spencer Tracy, was directed by C. F. (Chuck) Reisner. James Wong Howe directed the cinematography. It is an M-G-M opus.

William Daniels hit the cinematographic bull's-eye twice in succession when he photographed "DINNER AT EIGHT" and "QUEEN CHRISTINA," both M-G-M aces. The latter, especially, seems destined to become a classic with Garbo starred and Dupont film.

George Folsey shot "GOING HOLLYWOOD," co-starring Marion Davies and Bing Crosby. The cinematography of this picture received much favorable comment from the critics.

FOX

"THREE ON A HONEYMOON." Producer, John Stone; from the novel, "Promenade Deck" by Ishbel Ross; screenplay by Edward T. Lowe and Raymond Van Sickle; director, James Tingling; assistant, Bert Schell; first cameraman, Joe Valentine; operative cameraman, Art Arling; stills, Emmett Schoenbaum and Frank Powolny; recording engineer, Albert Protzman; film editor, Alex Troffey; art director, Duncan Cramer; chief electrician, Tommy Ouellett; chief grip, George Carpenter; chief prop, Al Steinberg.

Cast: Sally Eilers, Zasu Pitts, Henrietta Crossman, Charles Starrett, John Mack Brown, Russell Simpson, Cornelius Keele, Irene Hervey.

"FREE GOLD" (tentative title). Producer, John Stone; screenplay by Lester Cole and Henry Johnson; director, George Marshall; assistant, Sam Schneider; first cameraman, Joe Valentine; operative cameraman, Irving Rosenberg; assistants, Warner Cruze and Roger Shearman; stills, Emmett Schoenbaum; recording engineer, Al Protzman; film editor, Fred Allen; art director, Duncan Cramer; chief electrician, C. Redd; chief grip, George Carpenter; chief prop, Frank Baker.

Cast: Claire Trevor, John Boles, Harry Green, Monroe Owsley, Roger Imhoff and others.

"MURDER IN TRINIDAD." Producer, Sol M. Wurtzel; author, John Vandercook; screenplay by Seton I. Miller; director, Louis King; assistant, Sid Bowen; first cameraman, Barney McGill; operative cameraman, Curtis Fethers, assistants, William Whitley and Milton Gold; stills, John English; recording engineer, Barney Fredericks; film editor, Alexander Troffey; art director, Duncan Cramer; chief electrician, Si Adams; chief grip, Charlie Hall; chief prop, Earl McKee.

Cast: Nigel Bruce, Heather Angel, Victor Jory, Harvey Clark, Murray Kinnell, Pat Somers.

"TOO MANY WOMEN." Producer, Al Rockett; author, Vera Caspary; screenplay by June Storm, Oscar M. Sheridan, Lenore Coffee; director, James Flood; assistant, Percy Ikerd; first cameraman, L. W. O'Connell; operative cameraman, Harry Jackson; assistant, Eddie Collins; recording engineer, George Leverett; assistant, William Brent; film editor, Dorothy Spencer; art director, Gordon Wiles; chief electrician, John Blanke; chief grip, Fred Richter; chief prop, Tommy Plews.

Cast: Warner Baxter, Rosemary Ames, Rochelle Hudson, Henrietta Crossman, Herbert Mundin, Lillian Stuart.

"ALL MEN ARE ENEMIES." Producer, Al Rockett; author, Richard Aldington; screenplay by Samuel Hoffenstein and Lenore Coffee; director, George Fitzmaurice; assistant, William Tummell; first cameraman, John Seitz; operative cameramen, Joe McDonald and Richard Towers; assistants, Jack Epstein and Harry Webb; stills, Mack Elliott; recording engineer, E. Clayton Ward; film editor, Harold Schuster; art director, Max Parker; chief electrician, Jack Frier; chief grip, George Switzer; chief prop, Edward Donahue.

Cast: Hugh Williams, Helen Twelvetrees, Herbert Mundin, Mona Barrie, Halliwell Hobbs, Henry Stephenson, Una O'Connor.

R-K-O

"LONG LOST FATHER." Author, G. B. Stern; adaptor, Dwight Taylor; director, Ernest B. Schoedsack; first cameraman, Nick Musuraca; film editor, Paul Weatherwax.

Cast: John Barrymore, Helen Chandler, Donald Cook, Alan Mowbray, Claude King.

"MEANEST GAL IN TOWN." Author, Arthur Horman; adaptors, Richard Schayer, Russell Mack and H. W. Hanemann; first cameraman, J. Roy Hunt; recording engineer, George D. Ellis; film editor, James B. Morley.

Starring: Zasu Pitts.

METROPOLITAN

Shooting: "THE CATSPAW." First cameraman, Walter Lundin; operative cameraman, William Stuart Thompson; assistants, Ellis Carter and Harold Carney; stills, Eugene Kornman.

Starring: Harold Lloyd.



Buzz Berkeley directing a number from "Satterfield," assistant and George Barnes, first composite made by Bert L.

MISCELLANEOUS

Ralph Staub has begun work of directing his ninth comedy for Warner Brothers. His is Ben Blue.

Joe Rucker, famous for his work with the expedition in the Antarctic, is on his way to the Orient where he has a newsreel assignment to China and Manchukuo. His return to the homestead at San Francisco is indefinite.

George (John of Gaunt) Lancaster departed Washington's Birthday for the ghost-town of Nevada to complete the cinematography on the interesting little film classic, "Ghost Towns of Mother Lode."

The Academy of Motion Picture Arts and Sciences, in its annual primary awards, nominated as candidates for "Best Photography" Charles Lang of Paramount, as cinematographer of "Farewell to Arms"; George Folsey of MGM, photographer of "Reunion in Vienna"; and Struss, Paramount, "Sign of the Cross."

M. A. Anderson photographed the Chestnut picture, "MURDER ON THE CAMPUS." It was directed by Richard Thorpe.

RAGRAM

Every Motion Picture Is a
Compromise, but the Cam-
eraman's Position Is So
Definite That There Is No
Argument.

FROM THE CAMERAMAN'S ANGLE

No. 3



of 1934" (Warner Bros.), with George (pectively, on Berkeley's left). A unique cameraman on the picture.

COLUMBIA

Emil Oester, Head of Camera Dept.
ing: "HIGHWAY PATROL." Screen-
Harold Shumate; director, Ross Leder-
; first cameraman, Ben Kline; operative
Stumar; assistants, Fred Daw-
a Jack Russell; recording engineer, George
Tim McCoy.

"WIRLPOOL." Screenplay by Ethel Hill;
ct: Roy William Neill; assistant, Wilbur
igh; first cameraman, Ben Kline, Joe August
Stumar; operative cameramen, F. M.
w and Dave Ragin; assistants, Fred Daw-
arcel Grand, Al Keller, Jack Russell, Jack
en, A. L. Schaffer; recording engineer, G.
ier.

"EIGHTEENTH CENTURY." Screenplay by
icht and Charles MacArthur; director, How-
ws; first cameraman, Joseph August;
rative cameraman, Dave Ragin; assistants,
o Grand and Jack Anderson; stills, Irving
oni.
as John Barrymore, Carole Lombard, Roscoe
George E. Stone, Walter Connolly, Etienne
art.

UNIVERSAL

"DOOMED TO DIE." Producer and author,
Ken Maynard; director, Alan James; assistant,
Mike Eason; first cameraman, Ted McCord;
operative cameraman, Joe Novak; assistants, John
McBurner and Bert Eason; film editor, Charles
Harris; art director, Ralph Berger.

Shooting: "I'LL TELL THE WORLD."
Producer, Dale Van Every; author, Lincoln Quar-
berg; director, Edward Sedgwick; assistant di-
rector, E. A. Woehler; first cameraman, Norbert
Brodine; operative cameraman, Wallace Chewning;
assistant, Arthur Geste; stills, Roman Freulich;
art director, Stanley Fleisher.

Cast: Lee Tracy, Roger Pryor, Gloria Stuart.

"GLAMOUR." Producer, B. F. Teidman;
author, Edna Ferber; screenplay by Don Ander-
son; director, William Wyler; assistant, Roy Tay-
lor; first cameraman, George Robinson; operative
cameraman, Jeff Gibbons; assistant, Edward Ze-
ranski; stills, Shirley Martin; art director, Danny
Hall.

Cast: Constance Cummings, Paul Lukas, Phillip
Reed, Joseph Cawthorn and Doris Lloyd.

"UNCERTAIN LADY." Associate producer,
Dale Van Every; director, Karl Freund; first
cameraman, Charles Stumar; operative cameraman,
Maurice Gertsman; assistant, James Drought.

Cast: Genevieve Tobin, Edward Everett Hor-
ton, Dorothy Peterson, Frank Lyman, Herbert
Corthell, Renee Gadd.

THE TRADE PRESS SEES THE CAMERAMAN

THE REPORTER

"GOOD DAME"—"Leon Shamroy's photog-
raphy is a lesson in that art." Paramount.

"Lauron Draper, first cameraman, gets a break
this week. Last night (February 5) he took off
by plane for Dartmouth College, in the hills of
New Hampshire. There he will make an MGM
Pete Smith short on the annual winter sports.
Break for him is that he will make it alone,
with no director to tell him what to do. Carried
his script in his pocket and the rest is up to
his own judgment."

"GAMBLING LADY"—"And George Barnes'
photography is worthy of mention." Warner-First
National.

"MEN IN WHITE"—"The photography by
George Folsey is something to rave about." MGM.

"COUNTESS OF MONTE CRISTO"—
"Charles Stumar's photography outclasses the
story. It is really stunning." Universal picture.

"SHE MADE HER BED"—"Milton Krasner
bent a clever camera upon the picture." Para-
mount.

VARIETY

"DAVID HARUM"—Hal Mohr, Cinematog-
rapher. "Photography is excellent, and while re-
cording needs to be improved in spots, it can
stand for very little trimming." Fox.

"REGISTERED NURSE"—"Cameraman Sid
Hickox has done some good work with the
numerous drab interiors." Warner-First National.

MONOGRAM-CARR

"MANHATTAN LOVE SONG." Author, Cor-
nell Woolrich; screenplay by David Silverstein;
director, Leonard Fields; assistant, Vernon Keays;
first cameraman, Bob Planck; operative camera-
man, Reggie Lanning; assistant, Russ Harlan;
stills, Joe Walters; recording engineer, J. Stransky,
Jr.; film editor, Carl Pierson; art director, E. R.
Hickson; chief electrician, Edward L. Cox; chief
grip, Robert Murphy; chief prop, Arden Cripe.
Cast: Bob Armstrong, Dixie Lee, Franklyn
Pangborn.

"THE LOUD SPEAKER." Producer, W. T.
Lackey; author, Ralph Spence; director, Joseph
Santley; assistant, Mack Wright; first cameraman,
Gilbert Warrenton; operative cameraman, Ernie
Laszlo; assistant, James King; stills, Merritt J.
Sibbald; recording engineer, Wally Eneyart; film
editor, Jack Ogilvie; art director, E. R. Hickson;

WARNER-FIRST NATIONAL

"WONDER BAR." Cinematographer Sol
Polito has finished work on "Wonder Bar," which,
judging from reviews in the trade papers, has
gone over with a bang and is going to be a
real money maker. Mike Joyce was the operative
cameraman, Louis De Angelis, assistant, and Bert
Longworth shot the stills. Busby Berkeley, who
will be remembered for his splendid work in
"Footlight Parade," is responsible for the mystical
effects in "Wonder Bar." The authors of the
story are Karl Farkas and Geza Berczeg; adaptor,
Earl Baldwin; film editor, George Amy; chief
electrician, Frank Flanagan.

Cast: Al Jolson, Kay Francis, Dick Powell,
Dolores Del Rio.

Polito's next assignment is "DOCTOR MON-
ICA," starring Kay Francis and directed by Wil-
liam Keighly. The operative cameraman will be
Al Green and the assistant, Fred Terzo. Bert
Longworth will handle the stills. Frank Flanagan
is chief electrician.

Shooting: "SAWDUST" (temporary title).
Supervisor, James Seymore; original story by Bert
Kalmar and Harry Ruby; screenplay by Tom
Buckingham; director, Ray Enright; assistant,
Russ Saunders; first cameraman, Sid Hickox;
operative cameraman, Wesley Anderson; assistant,
Vernon Larson; stills, "Mickie" Marigold; record-
ing engineer, E. A. Brown; film editor, Clarence
Kolster; art director, Esdras Hartley; chief elec-
trician, Paul Burnett; chief grip, L. P. Mash-
mire; chief prop, Howard Ogle.

Cast: Joe E. Brown, Patricia Ellis, Gordon
Westcott, Dorothy Burgess, Donald Dillaway,
"Poodle" Hanneford.

"THE KEY." Producer, Robert Presnell;
screenplay by Laird Doyle; director, Michael Cur-
tiz; assistant, Eric Stacey; first cameraman, Er-
nest Haller; operative cameraman, Al Roberts;
assistant, Martin Glouner; stills, John Ellis; re-
cording engineer, Stanley Jones; film editor, Tom
Richards; art director, Robert Haas; chief elec-
trician, Roy Thompson; chief grip, Dudley Slaus-
son; chief prop, Tom More.

Cast: William Powell, Edna Best, Colin Clive.

UNITED ARTISTS

"BULLDOG DRUMMOND STRIKES
BACK." Original story by H. C. McNeille;
screenplay by Nunnally Johnson; director, Roy
Del Ruth; first cameraman, Peverell Marley;
operative cameraman, Harry David; assistants,
Lee Crawford and Irving Klein; stills, Kenneth
Alexander.

Cast: Ronald Colman, Loretta Young, War-
ner Oland, Charles Butterworth, Arthur Hohl,
Billie Burke.

"THE FIREBRAND." Based on stage play
by Edwin Justus Mayer; adaptation by Bess
Meredyth; director, Gregory La Cava; first
cameraman, Charles Rosher; operative cameramen,
Roy Tripp and Roy Clark; assistant, William
Reinhold; stills, Clarence Hewitt.

Cast: Constance Bennett, Fredric March,
Frank Morgan, Fay Wray, Vince Barnett, Louis
Calhern, Jessie Ralph.

PARAMOUNT

"BOLERO." Authors, Carey Wilson and Ku-
bec Glasmon; adaptor, Horace Jackson; director,
Wesley Ruggles; first cameraman, Leo Tover;
operative cameramen, Fred Mayer and William
Mellor; assistants, Jack Wendall and Guy Roe;
still, Hal McAlpin; recording engineer, Earl Hay-
man; film editor, Hugh Bennett.
Cast: Carole Lombard, Sally Rand, Frances
Drake.

"WHARF ANGEL." Author, Frederick
Schlick; adaptors, Samuel Hoffenstein and Frank
Partos; directors, William Cameron and George
Sommes; first cameraman, Victor Milner; opera-
tive cameraman, William Mellor; assistant, Guy
Roe; stills, Talmage Morrison; art directors, Hans
Dreier and John Goodman.

Cast: Victor McLaglen, Dorothy Dell, Preston
Foster, Alison Skipworth, David Landau and
others.

chief electrician, Austin Herrick; chief grip, Ber-
tram Hayes; chief prop, Bob Landers.

Cast: Ray Walker, Jacqueline Wells, Noel
Francis.



LEON GAUMONT

By EARL THEISEN
Honorary Curator
Motion Pictures
L. A. Museum

(Much of the material in this article was obtained from translations by M'lle. Andree Barlatier and Roger Loutz, of French documents written by Leon Gaumont. For this service and cooperation the author wishes to express his gratitude.—Editor's Note.)



Leon Gaumont

WHEN considering motion picture inventors one naturally thinks of Leon Gaumont. That is a trite but justifiable way of summing up the contributions of this pioneer of the motion picture. Among his achievements may be listed everything from a new screw to anchor another gadget to a projector to color or sound pictures. To enumerate them all would require a volume.

Gaumont had his start in photography before there were motion pictures. In 1885 he had a photographic establishment at No. 57 de la rue Saint-Roch, near the l'Avenue de l'Opera in Paris. Here he gained a reputation of making a better grade of photographic apparatus and when the flare-up of the "living picture" came ten years later, Gaumont was one of the number who concerned themselves with the problem of making a projector. He tried to do something with an apparatus called the "Bioscope-Demeny." It was on the principle of the device that Demeny had been working on for a number of years, with which Demeny had tried in 1892 to make a form of pictures that talked by taking a series of photographs with a "photographic gun" and then they were to be synchronized to a phonograph record. The sequence of pictures were placed around the outer edge of a glass disc.

In 1896, Demeny in collaboration with Decaux altered the Bioscope-Demeny and introduced another device which they called the "Chronophotograph." The Chronophotograph or, as it was later known, "the Chrono," utilized the Demeny cam intermittent and in it was a close alliance to the Lumiere Cinematograph.

The Chrono was shown at the Paris Exhibition in 1900 where it attracted attention and, incidental to this display of what may be said to be the first Gaumont device, its popularity spread to the towns near Paris. The demand for the Chrono pictures was such that Gaumont organized a department to make cinematic subjects to sell. One of the more valuable of the early Gaumont subjects was the portrayal of the "Life of Christ." A catalogue of this picture which has the honor of a place in the Motion Picture Collection at the Los Angeles Museum, side by side with a handsome leather bound book on de Mille's "King of Kings," shows it to be a pretentious picture of de Mille's settings.

Both the Gaumont "Life of Christ" and the de Mille "King of Kings" followed a similar pattern, though one was only 2,000 feet in length while the other ran on for a length of 14,200 feet. Both were innovations and were the best the motion picture produced during their time. Because picture exhibitors did not believe in long pictures at that time, any part of the Gaumont picture could be bought by footage. Very few showed the entire picture at one time, but instead exhibited the sequence which they thought would be most interesting to their audiences.

Gaumont had by this time invented his noted "Beater-Movement" camera which he patented in 1902. This camera was much smaller and lighter than the contemporary camera.

In 1900 he started to develop a system of talking pictures and a year later he applied for patents. His first public demonstration was given of a synchronized talking picture on November 7, 1902, at the Societe Francaise de Photographie, when he presented his own talking portrait and a Gypsy dance.

From the Bulletin of the Societe Francaise de Photographie, of this date, we have the following statement made by Monsieur L. Gaumont:

"In course of a statement made to the French Photographic Society at the beginning of this year, we promised to give particulars of one of the methods of synchronizing gramophone and kinematograph. We are now going to redeem that promise; but before we start we should like to ask you not to be too critical, especially as regards the gramophone. What you are about to hear from the sound part of the combination will, I am afraid, be somewhat poor in quality. We considered it advisable, however, to give the results hitherto achieved without delay, and leave it to some future occasion to demonstrate the improvements we hope to effect in sound registration and reproduction, remote as this particular thesis is from the special interests of the Society.

"An examination of the various systems put forward would go beyond the scope of this talk. We hope to be able to deal with them at some future meeting.

"The machine we have before us is the one we finally settled on after numerous experiments—how many Heaven alone knows!—in collaboration with our friend Decaux.

"The gramophone is the most delicate part of the mechanism and one that does not admit of the least flaw in its construction; and what we had to do was to make it act like an orchestral conductor and operate the kinematograph; in short, its movement had to control those of all the rest of the mechanical combination. On the other hand, seeing that gramophone and kinematograph could not be set up side by side, they had to be coupled by means of a flexible shaft. Flexible cable was quite suitable for the purpose, but it unfortunately seriously hampered working at any distance exceeding a few yards and was quite out of the question at the beginning of coupled movement.

"You will by this time have guessed that electric transmission was the very thing for the purpose. The problem was solved for us. We coupled up a mains-fed motor to the gramophone, regulating the speed of the former by that of the latter. Then we connected the electric motor coupled to the kinematograph with the current distributor fixed on one of the phonograph shafts, so

that the two machines starting simultaneously and running all the time at the same speed exactly gave us perfect synchronization at all time points.

"We are glad to have this opportunity of giving the French Photographic Society, which has always appreciated our efforts, the first indications of the way in which we have solved the problem of synchronization."

From the *L'Industrie du Film Parlant*, published in 1929, we have Gaumont's description of his early system:

"The wax cylinder, cumbersome and fragile, gave way to the disc which you all know. The rotating disc system, which created the rotative distributor and its multiple cable, were replaced by the following arrangement:

"Two small electric motors similar to (A and B) of the same power are branched on the sector, their inductors allowing the same number of sections, each reunited, as usual to the successive blades of the collector placed at the end of the shaft, that holds two brushes bringing the current on the collector.

"But to assure the synchronized pace of the two motors, 3 derivations of equal distance were taken to the inductor, that is to say, separated by 120 degrees, and joined to rings mounted on the other extremity of the shaft extended for this purpose. Each one of the three rings on each motor is joined to the corresponding ring of the other motor.

"When in action, if one of the motors tends to run faster, it sends in the inductor of the other one a current which increases the pace of the latter and the synchronization is thus automatically maintained.

"We learned afterwards that Elihu Thomson used a similar arrangement for synchronized control of the spindles of the weaving machines.

"In 1906, the registration of sounds, obtained up to that time by the imprint left in the wax by the point of a stylet mounted in the center of a mica disc, was replaced by an electrical registration due to the use of a microphone and a graving style in steel placed in a powerful magnetic space and displacing itself under the action of the induction bobbins run over by the wave current of this microphone; above, lateral inscriptions; below inscriptions; in depth "Hill and dale" recording.)

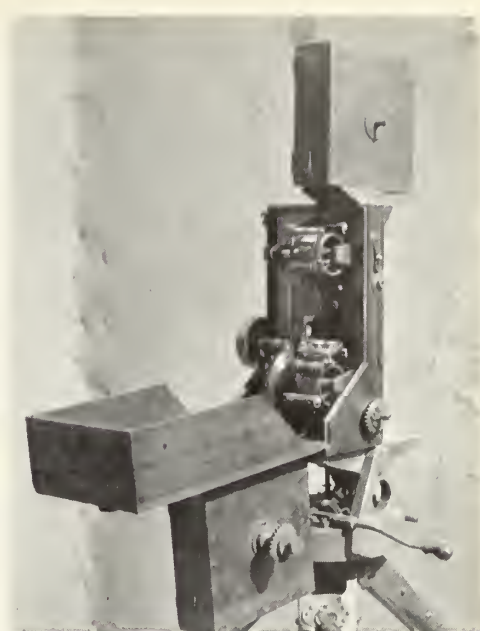
"The necessity of reproducing scenes of some duration lead us to use two-tray disc carriers, which were alternately and automatically started by means of electric contacts, in such a way that from the time that the disc placed on one of the trays was finished, the other began. The initial start of the apparatus, instead of being made on a sound signal, was unhooked by the passing of a needle on a metallic contact in the groove of the disc.

"In order to obtain, for the auditions in big rooms, a sufficient intensity we have studied and realized sound amplifiers that used compressed air.

"To guard against unwedging, a differential, controlled by a special motor, was intercalated between the synchronized motor and the apparatus."

This was a notable presentation and served as one of the initial stimuli to achieve the sound films. It gave the European audiences a taste of what was to come. What Gaumont did in this connection in Europe, Edison did in this country. It had been Edison's dream from the first to make pictures talk. In fact by this time he had been listing in his catalogue "Talking Pictures Synchronized to Records" for a number of years. One catalogue on display at the Los Angeles Museum of March, 1900, lists several different subjects, "accurately synchronized to special records." That "accurately synchronized" to records, however, is only generally correct, because there were no correctly synchronized "talkies" then.

In a recent booklet put out by the Etablissements Gaumont, Gaumont describes his method of synchronization. A photographic record was first made and then while it was playing a camera photographed the actor, who was



The Gaumont
Motion Picture
"Beater
Movement"
Camera of
1902

doing his best to follow the song or words of the record. Gaumont says of this, according to a translation from the French by Roger Loutz: "The synchronization was fairly successful, but the solution of the problem was not complete and could not be entirely satisfactory." It was, however, the germ idea of the talkies and as the "Chronophone," it continued to be shown for a number of years.

In 1903 it was shown at the Musee Grevan and a little later at the Theater du Gymnase as "Phonoscenes." And again it received impetus on December 27, 1910, when the talking picture of Professor d'Arsonval was presented at the Academie des Sciences.

The Chronophone was brought to this country in 1913 and it was shown at the 39th Street Theater on June 5, 6 and 7. The "Film-Parlant" had been showing to about 4,000 spectators nightly at the Gaumont Palace in Paris. The sound films continued at the Gaumont Palace until the war. The Gaumont Palace, by the way, was originally the famous Hippodrome and was now made over to a magnificent cinema show-place. It pioneered in Europe the idea of presenting the films from a projector placed behind the screen such as was introduced a few years ago by the "Trans-Lux" theaters in this country.

The Societe des Etablissements Gaumont was formed in 1906 at Belleville, near Paris, with a capitalization of 2,500,000 francs. That was the parent organization from which sprang agencies all over the world. By 1912, the capital had increased to 4,000,000 francs and there were 46 agencies in France and Europe. In 1896, Gaumont employed a dozen assistants and by 1912 the number increased to 1,500. That growth would be phenomenal even in the United States.

The English Gaumont Company, known as Gaumont Limited, in London, was organized in 1908, under the direction of A. C. Bromhead. This branch, particularly during the war period, advanced and put out many fine pictures that certainly did not lessen the acclaim of the motion picture audiences to Leon Gaumont. This continued as the foremost of the Gaumont branches until 1921 when A. C. Bromhead and R. C. Bromhead bought up the stock and properties to acquire ownership. It has since been independent though a close commercial alliance still remains.

Too, Gaumont is one of the ranking pioneers in color motion pictures. His first color pictures were of the hand stenciled color variety that both he and the Pathe Company brought to popularity about 1907-08. The color in these pictures, it will be recalled, was usually applied frame by frame in the sequences where it appeared,

and later, a method of cutting out stencils from a celluloid strip to correspond with the portions to be colored was invented. Usually three of these stencils were cut and then one after the other was passed in close contact with a black and white positive print, the color being applied by means of a brush at the point where the films were held in contact. Of course, this was an endless task; but the history of the motion picture is a story of patience itself.

Gaumont approached the problem of natural colors about 1909 and in 1912, he showed some film taken by his "trichrome" process at the Gaumont-Palace. This showing, because it was something of an innovation at that time since Kinemacolor, then, was new and was a process that could render two colors, while the Gaumont Process was a "Three-Color Additive" system, that is, the colors were not in the films, but the films were black and white and the color added by means of a color wheel giving a natural color on the screen.

This color-wheel is attached to the front of the projector and consists of sectors of colored gelatine or glass which add a color to the black and white picture passing through it during projection. An equal combination of the three primary colors used in this process gives a white, while a lesser tensivity of any of the colors, the other dominating colors are seen on the screen.

As I've said, it was new and good for that time and the press gave it flattering write-ups; though it was not the answer to the color problem. It is easy to imagine the excited audience viewing color pictures for the first time. Even though the color "fringed" they did not care. Gau-

mont did, however, and he continued with the problem through the years.

Color pictures did not exclude everything else. Gaumont had perfected a lead glass to be used to eliminate the harmful ultra-violet of the Kleig lights. He had perfected many still photographic devices, X-Ray materials, high speed motion pictures, motion picture developing machines and gadgets for everything both in still pictures and motion pictures.

During the war, motion picture activities in Europe were naturally suspended. Gaumont made his plant and nicely equipped factory available for purposes of war. He made radio apparatus for planes and for the army; he made projectors, long range cameras and other army instruments. Too, as a result of the war, a loud speaker known as the Gueritot and Aschel speaker, various telephony and public address systems were perfected.

Dating from the war his plant has continued to manufacture radios, lenses, auto starters and ignition systems.

Today Gaumont is noted for many things! For his great number of decorations and prizes earned in reward for accomplishments; for his "Actualities" or newsreels and his "Enclypodie" or educational and scientific films; for his honesty and sincere purpose to better the institution of the motion picture. And he is noted for the fact that he was one of those persons who brought back the Delhi Durbar. By fast ship and train he had the film shipped from India to his studio in Paris. It arrived at six o'clock in the evening and by nine o'clock, 7,500 feet of film were sent to London. The next morning the films were on the London screens. That was a fete in 1911. It was all a part of the Gaumont.

MINIATURE CAMERA PHOTOGRAPHY

(Continued from Page 12)

sent the relative amount of light required to give a similar exposure to each of these papers.

Chloride papers are obtainable in a greater variety of contrasts (soft, medium, hard, extra hard, etc.) and also yield snappier results. It is evident though that it will be necessary to employ a strong light in the enlarger. Quite recently there has been introduced a new Photoflood lamp which is made of Osram (opal) glass. It produces a soft white diffused light suitable for use with enlarging machines. As the regular Photoflood lamp, its light is equivalent to 750 watts, but it has an approximate life of five hours. When using chloride



The Foth
Derby
Enlarger

papers the regular lamp the enlarger can be replaced with the opal glass Photoflood. Precaution must be taken to prevent overheating with the subsequent buckling of the film.

Papers are supplied in various degrees of contrast to compensate for the variations in the tone range of the negative. A thin negative is improved by printing it

upon a hard or vigorous paper. Conversely, harsh, contrasty negatives require soft papers, whereas normal negatives are printed upon medium papers. Papers are also supplied in a large variety of surfaces, the selection of which is dependent upon the effect which the finished print is to convey, or the purpose it is to serve. For the usual commercial photography, a glossy surface paper is required. The general run of amateur photographs are best printed upon either a glossy, or semi-glossy paper. Printing mediums for artistic photographs and portraits can be chosen from a host of surfaces which manufacturers offer. There are standard surfaces such as smooth matte, rough matte, the mentioned papers being supplied either in white or buff color. Then we have specialized surfaces made by the various manufacturers such as Fabric Rough, Cyltex, Crystal Stipple, Porcelain Stipple, Gevaluxe Papier Velours, etc. Such papers have distinctive surfaces which lend themselves admirably to various subjects. Thus crystal stipple produces a sparkling photograph having the appearance of a crayon drawing upon a rough paper. Grevaluxe is a comparatively new paper, possessing a velvet like surface and exceedingly beautiful deep tones, which are ideal for landscapes and portraits. It is difficult to describe each of these specialized surfaces, the photographer should experiment with each from time to time, finally standardizing upon a few. The same principle can be applied to the general type of photographic papers. Various makes and types are tried, a final decision being made upon a few which serve best for the general run of work.

As a developer the common MQ formula is suited for both chloride and bromide papers. This can be purchased in small tubes which contain the necessary amount of chemicals. By dissolving the contents of the tube according to the directions a suitable developer for either chloride or bromide paper can be had. For those who wish to prepare their own solutions the following MQ formulas are listed:

(Turn to Page 23)

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SHUTTER VALUES

OVER-ALL MAGNIFICATION

EQUIVALENT F-VALUES OBTAINED
WHEN THE SHUTTER IS CLOSED DOWN INSTEAD OF THE LENS DIAPHRAGM
CAMERA SPEED CONSTANT

	170°	140°	120°	100°	90°	80°	70°	60°	50°	40°	30°	20°	10°
1.4	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.6	2.9	3.4	4.1	5.8	
1.8	2.0	2.1	2.3	2.5	2.6	2.8	3.0	3.3	3.7	4.3	5.3	7.5	
2.0	2.2	2.4	2.6	2.8	2.9	3.1	3.4	3.7	4.1	4.8	5.8	8.3	
2.3	2.5	2.7	3.0	3.2	3.4	3.6	3.9	4.2	4.7	5.4	6.6	9.3	
2.8	3.1	3.4	3.7	3.9	4.1	4.4	4.8	5.2	5.8	6.7	8.3	12	
3.2	3.6	3.9	4.2	4.4	4.7	5.0	5.4	6.0	6.6	7.4	9.3	13	
4.0	4.4	4.8	5.2	5.5	5.8	6.2	6.7	7.4	8.3	9.5	12	17	
4.5	5.0	5.4	6.0	6.2	6.6	7.0	7.6	8.4	9.3	10.7	13	19	
5.6	6.2	6.7	7.4	7.8	8.3	8.8	9.5	10.4	12	14	17	23	
6.3	7.0	7.6	8.4	8.8	9.3	9.9	10.7	11.7	13	15	19	27	
8	8.8	9.5	10.4	11.0	12	13	14	15	17	19	23	33	
9	9.9	10.7	11.7	12.4	13	14	15	17	19	22	27	37	
11	13	14	15	16	17	18	19	21	23	27	33	46	
13	14	15	17	18	19	20	22	24	27	31	37	53	
16	18	19	21	22	23	25	27	30	33	38	46	66	

This table is based on the Reciprocity Law. The analogy between closing the shutter down and stopping the lens down is not strictly true however due to the failure of the Reciprocity Law. The lens is actually "stopped down" a little more than indicated in the table when small shutter openings are used.

OVER-ALL MAGNIFICATION OF THE PROJECTED IMAGE
FOR VARIOUS COMBINATIONS OF CAMERA AND SCREEN MAGNIFICATION

Camera Magnification In Diameters	SCREEN MAGNIFICATION IN DIAMETERS													
	25	50	75	100	125	150	175	200	250	300	350	400	500	
	OVER-ALL MAGNIFICATION IN DIAMETERS													
.250	6.2	12.5	18.7	25.0	31.2	37.5	43.7	50.0	62.5	75.0	87.5	100.0	125.0	
.125	3.2	6.3	9.5	12.5	15.7	18.7	21.9	25.0	31.3	37.5	44.0	50.0	63.0	
.100	2.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0	25.0	30.0	35.0	40.0	50.0	
.080	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	20.0	24.0	28.0	32.0	40.0	
.064	1.6	3.2	4.8	6.4	8.0	9.6	11.2	12.8	16.0	19.2	22.4	25.0	32.0	
.050	1.2	2.5	3.7	5.0	6.2	7.5	8.7	10.0	12.5	15.0	17.5	20.0	25.0	
.032	.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	8.0	9.6	11.2	12.8	16.0	
.020	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	5.0	6.0	7.0	8.0	10.0	
.016	.4	.8	1.2	1.6	2.0	2.4	2.8	3.2	4.0	4.8	5.6	6.4	8.0	
.012	.3	.6	.9	1.2	1.5	1.8	2.1	2.4	3.0	3.6	4.2	4.8	6.0	
.010	.25	.5	.7	1.0	1.2	1.25	1.5	2.0	2.5	2.5	3.0	4.0	5.0	
.008	.20	.4	.6	.8	1.0	1.20	1.4	1.6	2.0	2.4	2.8	3.2	4.0	
.006	.15	.3	.45	.6	.75	.90	1.05	1.2	1.5	1.8	2.1	2.4	3.0	
.004	.10	.2	.30	.4	.50	.60	.70	.8	1.0	1.2	1.4	1.6	2.0	
.003	.075	.15	.22	.3	.37	.45	.52	.6	.75	.9	1.05	1.2	1.5	
.002	.050	.10	.15	.2	.25	.30	.35	.4	.50	.6	.70	.8	1.0	
.001	.025	.05	.07	.1	.12	.15	.17	.2	.25	.3	.35	.4	.5	



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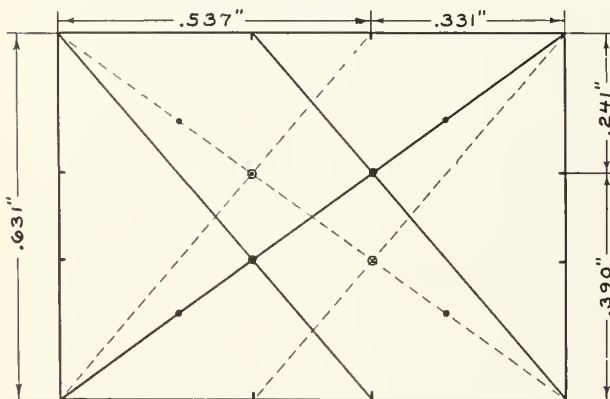
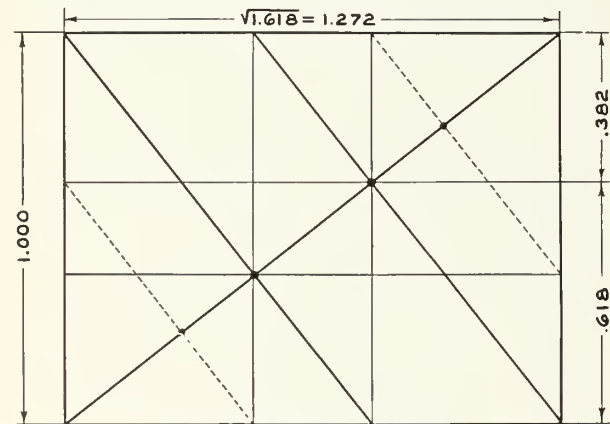
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12-B3

12-B2

DYNAMIC SYMMETRY
THE MEAN AND EXTREME RATIO APPLIED TO
MOTION PICTURE COMPOSITION

MEAN AND EXTREME RATIO = $\frac{.618}{1} = \frac{1}{1.618}$ = (THE GOLDEN MEAN)



The mean and extreme ratio applied to standard camera aperture
.637 by .868 of an inch.

SHUTTER VALUES

F-VALUES REQUIRED IN ORDER TO OBTAIN
THE SAME EXPOSURE AT VARIOUS DEGREES OF SHUTTER OPENING

CAMERA SPEED CONSTANT

	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	120°	140°	170°
1.4	1.0	1.4	1.8	2.2	2.6	3.0	3.4	3.8	4.2	4.6	5.0	5.4	5.8
1.8	1.3	1.8	2.3	2.8	3.3	3.8	4.3	4.8	5.3	5.8	6.3	6.8	7.3
2.0	1.4	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
2.3	1.6	2.3	2.9	3.5	4.1	4.7	5.3	5.9	6.5	7.1	7.7	8.3	8.9
2.6	1.8	2.6	3.2	3.9	4.5	5.1	5.8	6.4	7.0	7.6	8.2	8.8	9.4
2.8	2.0	2.8	3.5	4.2	4.9	5.6	6.3	7.0	7.7	8.3	9.0	9.7	10.4
3.0	2.2	3.0	3.7	4.5	5.2	6.0	6.8	7.5	8.2	9.0	9.8	10.6	11.4
3.2	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0	8.8	9.6	10.4	11.2	12.0
3.4	2.6	3.4	4.2	5.0	5.8	6.6	7.4	8.2	9.0	9.8	10.6	11.4	12.2
3.6	2.8	3.6	4.4	5.2	6.0	6.8	7.6	8.4	9.2	10.0	10.8	11.6	12.4
3.8	3.0	3.8	4.6	5.4	6.2	7.0	7.8	8.6	9.4	10.2	11.0	11.8	12.6
4.0	3.2	4.0	4.8	5.6	6.4	7.2	8.0	8.8	9.6	10.4	11.2	12.0	12.8
4.5	3.6	4.5	5.4	6.3	7.2	8.1	9.0	9.9	10.8	11.7	12.6	13.5	14.4
5.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0

This table is based on the Reciprocity Law. Due to the gradual failure of this law which creeps in as the exposure time is shortened it is well to open up the lens diaphragm a little more than is indicated in the table when small shutter openings are used.

MINIATURE CAMERA PHOTOGRAPHY

(Continued from Page 20)

*Metol-Hydroquinon Developer**For Contact Paper*

Water	- - - - -	32 ounces
Metol or Elon	- - - - -	15 grains
Sodium Sulphite (dry)	- - - - -	1 ounce
Hydrochinon	- - - - -	60 grains
Sodium Carbonate (dry)	- - - - -	1/2 ounce
Potassium Bromide	- - - - -	4 grains

For Bromide Papers

Water	- - - - -	32 ounces
Metol or Elon	- - - - -	20 grains
Hydrochinon	- - - - -	90 grains
Sodium Sulphite (dry)	- - - - -	3/4 ounce
Sodium Carbonate (dry)	- - - - -	1 1/4 ounces

When mixed add two drams of 10% solution of potassium bromide.

Many workers prefer the use of Amidol, claiming that it produces a good color and has the ability of bringing out all details in the negative. From personal experience I have found Amidol to be very satisfactory. This developer must be freshly prepared for it does not keep well upon standing. The formulas for Amidol are as follows:

*Amidol Developer**For Contact Papers*

Water to make	- - - - -	10 ounces
Sodium Sulphite (dry)	- - - - -	250 grains
Amidol	- - - - -	50 grains
Potassium Bromide	- - - - -	2 grains

For Bromide Papers

Water to make	- - - - -	20 ounces
Sodium Sulphite (dry)	- - - - -	325 grains
Amidol	- - - - -	50 grains
Potassium	- - - - -	10 grains

All manufacturers usually enclose with the package of paper a list of formulas which according to their experimentation they have found to be ideal for the paper in question. If all of the papers used are of the same type it is advisable to employ the developer recommended. When papers of varied makes are employed, the formulas above will be found to yield satisfactory results.

In general the exposure of the paper should be such that the development time will be two minutes. An ideal procedure is to first expose a test strip, and from that determine the correct printing time required by the negative in question. A small strip of the paper used is placed on the easel, and all but a small portion covered

with cardboard. The negative being in the enlarger an exposure of five seconds is made. Another small portion of the paper is drawn out from beneath the cardboard, and another exposure of five seconds is given. This is continued for about four or five exposures. This strip is developed for two minutes and from the variously exposed portions on the paper, the correct printing time of the negative is determined. Bear in mind that the last exposure was five seconds, the one before that ten seconds since that portion of the paper strip received two five second exposures, etc.

The photographer has at his disposal a unique instrument to determine the printing exposure time. This is the Largodrem. It is connected into the same electric current which supplies the enlarger. The meter is placed upon the easel and the negative projected upon it. With the use of tables, a simple calculation gives the correct printing time.

Another important consideration in enlarging is accurate focusing. This should always be accomplished with the lens diaphragm wide open. The latter can be closed down somewhat once focusing has been accomplished. A magnifying glass will be found handy in this work. E. Leitz supply focusing magnifiers which are mounted on a socket joint on a horizontal rod which slides on a bracket on a vertical support. The latter slips into a hole in the baseboard. This magnifier can be moved over the entire area of the enlarging paper, and then swung aside after use.

A unique instrument is offered by Photo Utilities, Inc., which is known as the P. U. Focusing Microscope. This consists of a metal base holding immovable the microscope tube at an angle of 45 degrees. The lower end of the tube is cut away allowing a selected portion of the projected image to strike a circular mirror held at an angle parallel with the plane surface of the easel. A ground glass within the tube carries cross lines for permanent adjustment of focus to the individual eye. Once the setting is adjusted it is made permanent with a set screw. The projected image reflected to the ground glass is brought to fine focus with the focusing device on the enlarger and when the proper setting is reached the grain of the emulsion is visible on the ground glass.

Many photographers are in the habit of closing down the enlarger lens diaphragm considerably after accurate focus has been established. This is not necessary. Actually there is one plane of sharp focus, and since the negative consists of a single plane, once focus has been established, closing down the diaphragm considerably to obtain a large depth of field will only necessitate a longer exposure time. Enlarging should not be compared with

(Turn to Page 31)

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MOTION PICTURE SOUND RECORDING



THE physical aspects of the sound stages and the types of portable and permanent monitoring equipment employed on them for sound recording were described at length in the preceding chapters on monitoring. This chapter continues that discussion of monitoring by considering how the monitoring equipment is operated to produce pleasing and artistic recordings of music and dialogue.

The technique of monitoring orchestrations is quite different from that employed for straight dialogue recordings. The "scoring" of music usually requires several microphones mounted before the orchestra in set positions that have been found to provide the most satisfactory blend of sound from the various musical instruments. (It must be mentioned here, however, that a few—a very few—monitor men still prefer to use one microphone for orchestrations.) The recording of dialogue and sound for routine picture production work usually is done with a single microphone that is moved during shooting to follow the actors; although occasionally for involved shots two or more microphones are employed.

Reverberation and Echo

Sound is reflected when it strikes a hard surface, such as a wooden floor or wall. If the reflecting surface is close to the source of sound, as within the confines of a sound stage, and there are several such reflecting surfaces to cast the sound back and forth an acoustic condition exists that is known as *reverberation*. The sound that is thus reflected back is termed *reverberated sound*. If the reflecting surface is at such a distance from the source of sound that there is an appreciable delay in the return of the reflected sound, the reflected sound is called an *echo*, for it is a distinct repetition of the original sound. The chief difference between reverberated sound and echo is in the length of time that elapses between the creation of the original sound and the return of the reflected sound.

Echo is not encountered when recording within sound stages, because their size is not great enough to cause sufficient delay in the return of the sound; but sometimes the presence of too many hard surfaces causes reverberation to become so pronounced that it is almost as objectionable as echo. A certain amount of reflected sound is necessary to secure realistic sound recording; but if the reverberated sound persists in the stage for an excessive length of time after the generation of the sound, successive sounds will be confused by an overlapping caused by the persisting reverberations.

Reverberation in Sound Stages

Reverberation is measured by the length of time required for a tone of 512 double vibrations per second (one octave above middle C) to die to one-millionth of its initial intensity. It has been found that a time of reverberation in the order of three-quarters of a second or less is satisfactory for the interiors of sound stages. In other words, a tone of 512 dv should not persist in a stage longer than three-quarters of a second without its intensity becoming reduced to one-millionth of its original value.

Sound stages have their interior surfaces covered with thick layers of sound-absorbing material, as previously explained; so they do not reflect sound to an appreciable extent. If the stage was empty, a sound generated in it would die away almost the instant the production of sound ceased. That is the reason sound stages are said to be acoustically "dead." The amount of reverberation present

Chapter VII

By

CHARLES FELSTEAD
Associate Editor



can be tested by clapping the hands sharply and listening to the persistence of the reverberated sound. When motion picture sets are built in such a stage, their hard walls serve to reverberate sounds generated within the sets; and since there is practically no reverberation from the dead walls of the stage, it is, so far as acoustic conditions are concerned, as though the sets were built out in the open.

Lack of "Depth" in Recorded Sound

The microphone is a monaural hearing device; whereas human beings have binaural hearing. The resulting flatness of "depth" in recorded sound is comparable to the lack of perspective in a photographed picture, which is due to the ordinary camera having monocular vision instead of our binocular vision. That is to say, the microphone represents just one ear, and human beings have two ears; the camera is like a single eye, and human beings have two eyes. These handicaps can be overcome to a certain degree by careful attention to the acoustic conditions existing within the set in sound recording, and by skillful lighting of the actors and their backgrounds in photography.

The two eyes with which a human being is provided make it possible for him to determine the distance and direction of an object he sees; and his two ears provide the means by which he determines, but in less accurate degree, the distance and direction of the source of a sound. In other words, his two eyes and two ears acquaint him with the "depth" of the world about him; they give perspective to everything he sees and hears; they make the world appear three-dimensional and real.

How a Source of Sound is Located

The interval of time that elapses between a sound reaching one ear and the other ear permits a human being to judge the direction from which the sound came; and he subconsciously determines his distance from the source of sound by noting its loudness and the ratio of direct to indirect sound he hears. His experience aids him in these determinations of direction and distance.

The closer the individual to the source of sound, the more direct and less reflected sound he hears. When he is at a distance from the source of sound, most of the sound that reaches his ears will have been reflected from adjacent walls and objects, and but little direct sound will be combined with it. This characteristic is employed in making the sound recorded for motion pictures seem natural.

Locating the Microphone Effectively

If an actor is in the rear part of a large set and the camera is equipped with a lens for making a long shot, the microphone should be placed facing partly toward the actor and partly toward some large, hard surface, such as a wall, so that it will receive mostly the reflected voice of the speaker. Then when the sound is reproduced in a theatre, the proper illusion of distance of the speaker back of the screen will be obtained. But if the camera is set for a close-up, the microphone should be hung in front of

the actor and close to him, so that it will receive practically nothing but the direct voice.

In any case, the amount of reverberated voice picked up by the microphone will also be influenced by the type of set. Even in a close-up it would be permissible to have a noticeable amount of reverberated voice present if the set represented a dungeon, or other place where the voice would normally sound rather "tubby." If in a long shot the scene was supposed to be the porch of a house, or other place in the open the amount of reverberated voice that should be recorded would be much less than if the scene were in a closed room. In such situations the experience and common sense of the monitor man should dictate the placing of the microphone, regardless of any rules he may have learned.

Relationship of Camera and Microphone

The cameraman can change the focal length of the lens on his camera at will by switching lenses, thus making a close-up with the camera at a distance from the actor or a long shot with the camera quite close to the action; so the monitor man must keep a constant check on the type of lens used on the camera for each take and arrange his microphone position accordingly. As an example, the cameraman can be using a thirty-five millimeter lens to take a long shot of some action located at a little distance from him, and then switch to a close-up by changing to a six-inch lens without moving his camera. On the screen, it will appear that the camera was brought up closer to the action.

There must be a fixed relationship between the image of the actor on the screen and the sound of his voice, just as there is a fixed relationship between the eyes and ears of the human being. When the brain centers connected with the eyes cause them to focus on some object that is producing sound, the brain centers connected with the ears likewise focus their attention on the sound emitted by that object. If a speaker appears to be thirty feet back of the screen, the audience naturally expects that his voice will sound as though it likewise originates at a point thirty feet back of the screen and coincident with the speaker.

The Effect of Monaural Hearing

When an individual totally loses the hearing of one ear, he is reduced to the same state of monaural hearing that hampers the microphone. He no longer has the subconscious ability that he possessed when he had normal hearing of concentrating his mind on sounds coming from a certain direction and distance to the exclusion, more or less, of all other sounds. As a result he hears reverberation and all incidental sounds much louder than he would if he retained the discrimination that binaural hearing allowed him. The microphone faces the same difficulty. For that reason motion picture sets must be constructed so that reverberation in them is below what would sound natural to the individual with normal hearing. Incidental sounds are kept at a minimum by doing the shooting in sound-proof stages.

Following the Action

When the actor moves about in the set and talks, the sound of his voice naturally should appear to follow him when the scene is reproduced on a screen. To create that effect the microphone must be moved when the speaker



One of the palatial new projection theatres specially built at Universal City for the showing of sound and dialogue pictures. The picture shows the screen and the general decorative effect. There is room for 1,000 spectators.

moves, so that the sounds picked up by it bear a proper relationship to the image being photographed. Thus it is evident that to create the necessary illusion of reality, a sound motion picture must be so made that when it is shown on a screen the sounds appear to come from the parts of the set in which our eyes tell us they are originating.

Single-Microphone Recording

So that the required relationship may always be maintained between the camera and microphone during the shooting of a scene, it is desirable to use only one microphone at a time. A few monitor men claim that they obtain better results by having several microphones hung at predetermined points about the set, and by fading with the mixer controls from one microphone to another as the action progresses. The majority of monitor men, however, now favor the use of a single microphone for dialogue recording.

It is sometimes difficult to handle involved action with one microphone; but on the other hand it is not easy to control several microphones at the same time or to fade smoothly from one microphone to another when the action moves swiftly about a set. A microphone man who is experienced in the operation of a microphone boom can usually follow even the most complicated action with it, making it possible for the monitor man to do more consistent monitoring if he uses a single microphone.

In a case where a close-up shot is made of an actor speaking his lines with a noisy crowd in the background, best results are usually obtained with two microphones, placing one in the background to pick up the crowd noise and suspending the other close over the actor's head. By adjusting the mixer control connected with the crowd microphone to provide a suitable level for the crowd noise and regulating the other microphone control to follow changes in the loudness of the actor's voice, it is easy to maintain a pleasing balance between the crowd noise and the dialogue. If the noise made by the crowd is quite loud, a two-stage microphone can be used for the dialogue and a single-stage microphone for the crowd noise, the difference in gain helping to raise the dialogue above the background noise.

The next chapter will complete the discussion of monitoring and prepare to follow the speech circuit down into the main amplifier room.

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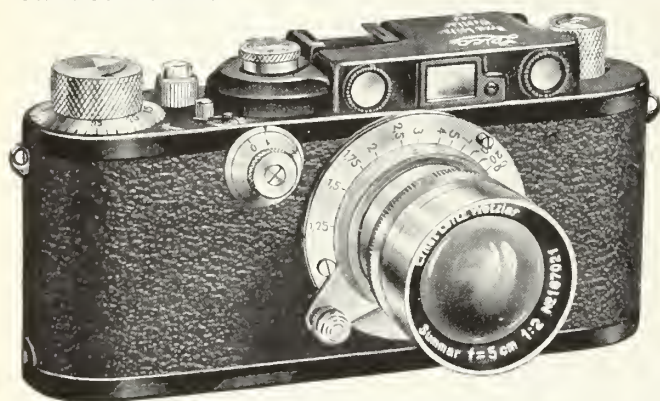
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L. A. AMATEUR CINE CLUB

Over one hundred members of the Los Angeles Amateur Cine Club learned many interesting suggestions from professional Hollywood camera men at their last monthly meeting when Faxon Dean and others gave demonstrations of their art.

Faxon M. Dean demonstrated fillers in News Reel subjects; explained the ingenuity of photographers in originating material to include "babies, battleships and beauty contests," and suggested methods of making ordinary subjects appear as interesting news.

Alternating programs between professional talks and examples of the members own pictures, the March 6th meeting at the Bell & Howell studio will consist of two contests, with helpful criticisms. Mr. Fred Champion is president of the club.

BROOKS EFFECT AND FILTER HOOD

One of the chief deterrents toward the inclusion of professional effects in amateur movies has been the prohibitive cost of devices yielding such results. To meet this situation Burleigh Brooks has designed an effect and filter hood that adequately meets the requirements of the amateur who desires "to do things" with his camera.

The Brooks filter holder, which is an integral part of the apparatus, will accommodate any two inch square filter, diffusion disc, fog filter or gage.

The hood, which is 3½ inches long, serves not only as a sun shade, a valuable feature in itself in securing clean, brilliant pictures, but in addition may be used with cut-out and masks to achieve any number of interesting effects such as wipe-outs, split screen shots, keyhole and binocular effects and the ability to iris in and out.

The Brooks Effect and Filter Hood sells complete with all attachments for \$8.50.

THE AMATEUR CAN LEARN FROM THE PROFESSIONAL

(Continued from Page 5)

ment?" The answer is simple—find out how the professional gets his effects and then copy him! It is not difficult. It is easy enough to find a substitute for professional equipment, and even though it may not be as handy to use it will, nevertheless, satisfactorily serve the purpose. One need only see the work of the professional to realize that with him nothing is impossible—why shouldn't the amateur take the same attitude?

Mr. Karl A. Barleben's newest book, "Travel Photography with the Miniature Camera," will soon be off the press of the Fomo Publishing Co., Canton, Ohio. His first book, "The Leica Data Book," is now going into the third edition within less than six months of the first printing. Price, 50 cents.—Editor's Note.

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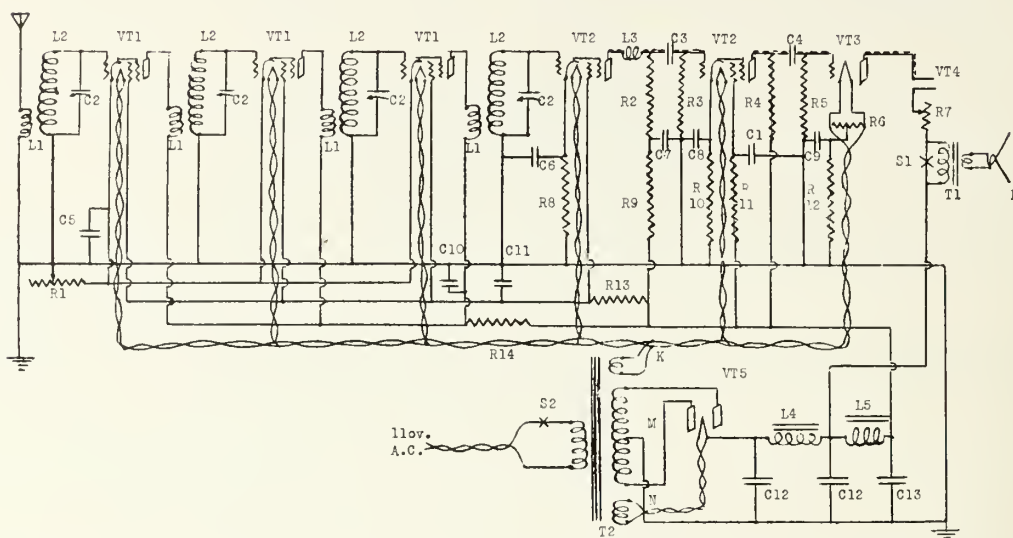
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OF THE Ten Best Pictures of 1933 chosen in the *Film Daily’s* poll, eight were American productions. Of those eight, seven were photographed on Eastman “Gray-Back.” This is outstanding evidence of the acceptance enjoyed by Eastman Super-Sensitive Panchromatic Negative among cameramen and producers . . . and a signal tribute to the versatility and unfailingly high quality of the film itself. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-Sensitive*
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Television

How to Receive Don Lee Television Images



THE Don Lee television transmitter, W6XS, transmits television images on a carrier frequency of 2800 kilocycles (107 meters) nightly, except Sunday, from 7 to 9 P. M., and Monday, Wednesday and Friday mornings from 9 to 11 A. M. Pacific Standard Time; and W6XAO on 44,500 kilocycles ($6\frac{3}{4}$ meters) nightly, except Sunday, from 7 to 9 P. M. and Monday morning from 9 to 11 A. M.; on 66,750 kilocycles ($4\frac{1}{2}$ meters) on Wednesday morning from 9 to 11 A. M.; and on 49,400 kilocycles (6 meters) on Friday morning from 9 to 11 A. M.

RECEIVER

The receiver for tuning in W6XS or W6XAO should tune broadly. It should pass a band 100 kilocycles wide. This can be accomplished by the use of closely coupled radio-frequency transformers; both primary and secondary wound on the same form and separated by only $\frac{1}{32}$ of an inch. The audio amplifier should be resistance coupled and capable of passing frequencies up to 50,000 kilocycles. "Positive" images are transmitted; high light intensity in the image corresponding to a high radio frequency output of the transmitters. They are correctly received by a receiver with "C" bias

detector and two stages of resistance coupled audio amplification, with a neon lamp directly in the last tube plate circuit; or with "C" bias detector and one stage of amplification for a cathode ray tube.

SCANNING DISK

The Don Lee television transmitters, W6XS and W6XAO, operate simultaneously, and transmit 80 line single spiral images, repeated 15 times per second, scanned from left to right and top to bottom. An inexpensive scanning disk for reproducing these images can be made as follows:

On a disk of cardboard or aluminum two feet in diameter, a circle of exactly $11\frac{3}{4}$ inches radius is drawn, and divided around its circumference into eighty equal parts. This corresponds to each $4\frac{1}{2}$ degrees. Radial lines are drawn from each of these divisions to the center of the disk. A small hole, fifteen thousandths of an inch in diameter, is punched or drilled at the intersection of the circle and any one of the radial lines. With cardboard, the hole can be made by pushing a common pin through the disk until one-sixteenth of an inch of the point projects on the further side. The next hole is punched on the next scanning line in a counter-clockwise

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direction, and eleven thousandths of an inch away from the circle toward the center of the disk. The next hole is punched on the next radial line in a counter-clockwise direction and twenty-two thousandths of an inch from the circle toward the center of disk, and so on around the disk, each hole being eleven thousandths of an inch nearer the center of the disk than the last one. A machinist's micrometer is useful in laying off these distances. The disk is provided with a suitable hub, or means to fasten it securely to the shaft of its driving motor.

The motor to drive the disk must revolve at 900 r.p.m. An eight pole synchronous motor operating on 60 cycles revolves at this speed. An induction or direct current motor of a higher normal speed than 900 r.p.m. can be reduced to 900 r.p.m. by inserting a rheostat in series with it and the line used where 50 cycle current or batteries must be the power supply. The motor from a large electric fan is often suitable. A neon plate lamp, as can be secured from the larger radio supply houses, is mounted on a simple support on the motor. It is positioned above the motor and behind the spiral of the disk in such a way that it can be seen through the holes of the disk when the disk is revolving. The neon lamp takes the place of the loudspeaker of a radio set, and is similarly connected, according to the instructions furnished by the manufacturer.

For a 17 inch diameter disk, which will convert existing 45 line 3 spiral equipment for Don Lee reception, the measurements are as follows: Circle, exactly 8 inch radius; 80 divisions, each $4\frac{1}{2}$ degrees; hole size, ten thousandths of an inch in diameter; each hole six and one-half thousandths closer to center of disk than previous hole.

ELECTRICAL SCANNING

A cathode ray tube capable of being modulated on its anode or grid is required, and scanning sources of 1200 cycles per second and 15 cycles per second of sawtooth wave-form are required. A gas triode, as the RCA 885, will produce these sawtooth waves. The output of the scanning sources are supplied to the deflection plates of the cathode ray tube to deflect the electron beam over the fluorescent screen to give the square field of view of the receiver.

Reports on reception results are appreciated from lookers and listeners. If a looker, definitely describe the action and scenes transmitted, and their exact time of reception, with comments on detail, and fading, ghost images, and interference, if any. If a listener, give the text of voice announcements which are transmitted on the hour and half-hour, identifying the pictures being broadcast, the exact time thereof, and data on the fading cycle, with the maximum and minimum intensity thereof in the usual "R" designation, intensity of static and interference, if any.

Upon request, your report will be compared with the official station log, and, if corresponding, a formal acknowledgement of your reception will be sent to you.

The information presented herewith is that which has been previously mentioned in the *International Photographer* as available to those who will write to the Don Lee Television Department.

LIST OF PARTS FOR W6XS TELEVISION RECEIVER

- R1—10,000 ohm volume control.
- R2—75,000 ohm wire wound resistor.
- R3—1 Megohm carbon resistor.
- R4—50,000 ohm wire wound resistor.
- R5— $\frac{1}{2}$ Megohm carbon resistor.
- R6—Center-tapped filament resistor.
- R7—0.5,000 ohm w.w. variable resistor.
- R8—100,000 ohm carbon resistor.
- R9—50,000 ohm carbon resistor.
- R10—1,000 ohm carbon resistor.
- R11—250,000 ohm carbon resistor.
- R12—1,200 ohm wire wound resistor.
- R13—300,000 ohm carbon resistor.

- R14—25,000 ohm carbon resistor.
 - C1—8 mfd. 450 volt electrolytic filter condenser.
 - C2—.00025 or .00035 mfd. 4 gang variable condenser.
 - C3—.1 mfd. 400 volt bakelite case paper condenser.
 - C4—.1 mfd. 400 volt bakelite case paper condenser.
 - C5—.1 mfd. 200 volt paper bypass condenser.
 - C6—8 mfd. 200 volt electrolytic filter condenser.
 - C7—8 mfd. 450 volt electrolytic filter condenser.
 - C8—8 mfd. 200 volt electrolytic filter condenser.
 - C9—100 mfd. 50 volt electrolytic filter condenser.
 - C10—.1 mfd. 400 volt paper filter condenser.
 - C11—.1 mfd. 400 volt paper filter condenser.
 - C12—8 mfd. 450 volt electrolytic filter condenser.
 - C13—8 mfd. 450 volt electrolytic filter condenser.
 - L1—25 turn primary, 1/32 inch separation from secondary (same form).
 - L2—41 turn secondary, 1 1/4 inch diameter threaded form, #30 enameled wire.
 - L3—Short wave radio frequency choke, 2 1/2 millihenries.
 - L4—30 henry 100 m.a. or higher ratings.
 - L5—2,500 ohm dynamic speaker field.
 - T1—Dynamic speaker transformer, 2A3 tube to voice coil.
 - T2—110v. power transformer with secondaries:
 - K 2.5 volt 10 amp.
 - M 800 volt center-tapped, 100 m.a. (delivering 450 volts D. C. to rectifier filter).
 - N 5.0 volt 2. amp. for 80, or 2.5 volt 3 amp. for 82.
 - VT1—RCA 58 or 24A tube.
 - VT2—RCA 57 or 24A tube.
 - VT3—RCA 2A3 tube.
 - VT4—Neon plate lamp (for hole disk) or Neon crater lamp (for lens disk).
 - VT5—RCA 80; or 82, shielded, and with r.f. choke unit.
 - S1—S.P.S.T. snap switch.
 - S2—S.P.S.T. 110v. ditto.
 - D—Dynamic loudspeaker.
- All tubes except 2A3 and 80 must be shielded.
Coils L1-L2 must be shielded, 2 3/4 inch diameter aluminum cans.
Connections shown as - - - must be run in a short and direct manner, and kept away from the chassis.

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BELL & HOWELL Professional Motion Picture Camera complete with 35—40—50—75 mm. lenses and Mitchell tripod legs. Also Akeley Camera complete with 2 in., 6 in., 17 in. lenses. Mervyn Freeman, 1960 South Vermont Ave., Los Angeles, Calif. Phone: REpublic 3171.

SINCE 1911. Cameras bought, sold, rented, repaired.
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356 South Broadway, Los Angeles Upstairs

FOR SALE—CAMERAS AND EQUIPMENT

MITCHELL HI-SPEED CAMERA—3 lenses, F.2.3, 5 magazines, Friction Head, beautiful condition—\$1650. Camera Supply Co., Ltd., 1515 Cahuenga Ave., Hollywood.

BELL & HOWELL CAMERAS—silenced by Cunningham—exclusive specialty of Camera Supply Co., Ltd., 1515 North Cahuenga Blvd., Hollywood.

BELL & HOWELL with beautiful Fear movement, complete—perfect shape, quick snap \$800. Camera Supply Co., Ltd., 1515 North Cahuenga Blvd., Hollywood.

1000 FOOT MAGAZINES for Bell & Howell, brand new—\$85. Camera Supply Co., Ltd., 1515 North Cahuenga Blvd., Hollywood.

NEW AND USED HOME MOVIE CAMERAS—DeVry Motion Picture Cameras—sound on film portable projectors with operators for rent. Photographic supplies—fine grain finishing—courteous service. Educational Project-O Film Co., 1611 North Cahuenga, Hollywood.

REAL BARGAINS in 16 and 35 mm. movie equipment and still cameras. Newest types cameras and projectors in all popular makes. Save money on film, lights, lenses and all essential accessories. Our 36 years of experience stands back of every sale. Before you buy, send for our new bargain booklet. Burke & James, Inc., 223 W. Madison St., Chicago.

CAMERA REPAIRING

BELL & HOWELL cameras with old type shuttles silenced, \$150. Hollywood Motion Picture Equipment Co., 645 No. Martel Ave., Hollywood.

FOR SALE OR RENT—MISCELLANEOUS

25 MM. FINDER ADAPTERS for standard finders, showing correct field of 25 mm. lens, in use by all major studios. \$30.00. Camera Supply Co., Ltd., 1515 Cahuenga Ave., Hollywood.

LIKE NEW—BELL & HOWELL 5-WAY SOUND PRINTER, Moviola Model C or D. Hughes 4-wheel inflated tire dolly, two Holmes sound projectors. Cheap for cash. Box XYZ, I. A. T. S. E., 1605 North Cahuenga Ave., Hollywood.

MITCHELL MOTOR—1000 ft. Mitchell magazines. J. R. Lockwood, Glendale. Douglas 3361-W.

FOR SALE—75 mm. Cooke Lens. F.2 in Mitchell mount complete. 50 and 75 mm. Astro lenses, mounted and unmounted. J. R. Lockwood, 523 North Orange Street, Glendale. Douglas 3361-W.

BUYERS READ these classified advertisements as you are now doing. If you have something for sale or exchange—advertise it in these columns. **THE INTERNATIONAL PHOTOGRAPHER**, 1605 No. Cahuenga Ave., Hollywood.

FOR RENT—25 and 35 mm. lenses, motor adapters, Mitchell Standard tripod head, baby tripod, 400 ft. Mitchell magazines. J. R. Lockwood, 523 North Orange St., Glendale, Douglas 3361-W.

FOR RENT—CAMERAS


TWO THOROUGHLY silenced Mitchell cameras. Follow focus device, Pan Astro lenses, Freehead—1000 ft. magazines. J. R. Lockwood, 523 No. Orange St., Glendale. Douglas 3361-W.

THE INTERNATIONAL PROJECTIONIST

THE INTERNATIONAL PROJECTIONIST, a monthly magazine published in the interests of the projectionist. Interesting, instructive. Yearly subscription U. S. and possessions, \$2; foreign countries, \$2.50. James I. Finn Publishing Corp., 1 West 47th St., New York.

CAMERA EQUIPMENT WANTED

CALLING ALL CAMERAMEN! I want camera equipment and \$4000 cash in exchange for new two-story Spanish hillside home in cameraman's paradise. For description of property see classified ad in September, 1933, International Photographer. Erickson. Hurry, Boys!



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WANTED TO BUY

WANTED TO BUY—Used Leica or Contax cameras and any kind of accessories for above cameras. Must be cheap. Box XYZ, International Photographer, 1605 North Cahuenga Ave., Hollywood.

COMPLETE SILENCED MITCHELL CAMERA. Give number, full particulars and best cash price. Box NX, International Photographer.

POSITION WANTED

DO YOU WANT A CAMERAMAN who is an expert on studio production; or an expedition cameraman who knows every corner of the world; or a cameraman who thoroughly understands the making of industrial pictures; or an expert newsreel photographer; or an expert color cameraman? A limited number of cameramen, backed by years of experience, are available. Write stating your requirements and we shall be glad to assist you in choosing the kind of cameraman you want. **INTERNATIONAL PHOTOGRAPHER**, 1605 North Cahuenga Ave., Hollywood.

AN AUDITOR AND ACCOUNTANT of thirty years' experience with large companies wants small accounts with individuals or business houses. Wide experience in opening, closing and keeping books, in auditing, and in income tax procedure. Wishes to assist individuals in opening their own books. Advice and assistance on filing income tax returns and income tax regulations. Very reasonable rates. **CHARLES D. FELSTEAD**, 2010 Sixth Avenue. Telephone: PA-6768.

MISCELLANEOUS

COMPLETE COURSE IN FLYING—If interested in aviation, see Roy Klaffki, 1605 North Cahuenga Ave., Hollywood.

WANTED—To know of the whereabouts of motion picture relics, documents, or equipment of a historical nature for Museum purposes. Write Earl Theisen, care of International Photographer, 1605 Cahuenga Ave., Hollywood.

TRICK PHOTOGRAPHY. Exclusive agency for three leading Hollywood makers of trick lenses. Apply for prices and demonstration, sale or rentals. Camera Supply Co., Ltd., 1515 Cahuenga Ave., Hollywood.

MINIATURE PHOTOGRAPHY

(Continued from Page 23)

actual photographing wherein there is present a greater number of planes; the lens being focused upon an object in one of the planes, and the diaphragm closed down as far as light conditions will permit, to increase the depth of the field, and render other planes sharp. In enlarging we have the single plane in which the negative emulsion lies to contend with. It is advisable as an insurance to close the diaphragm a small amount. The use of very small apertures, however, in general enlarging is waste effort. I mention general enlarging for there are occasions which call for small diaphragm openings to establish a large depth of focus.

At times in photographing tall buildings we are obliged to tilt the camera at an angle to include as much of the structure as possible. In the resulting negative the building will appear in a distorted angle. To correct this the easel is raised at one end until the building appears in the normal fashion. It is obvious that if focusing (with the diaphragm wide open) is done on the lower portion of the easel, the raised side will appear out-of-focus. To correct this focusing is done on the center of the easel, and the diaphragm is closed down to a considerable extent, to provide a large depth of focus; and a relatively longer exposure is given.

It is possible by an adjustment of the relation between the exposure time, and development time to control the contrast in the print. If a short exposure time is given and therefore longer development, the result will be a print of greater brilliance and contrast. Long exposure and short development tends to minimize contrast. There are of course limitations. The print cannot be left in developer after a certain time, otherwise fog will develop. Generally it may be allowed to remain in the developer for double the normal time required, with the developer used. As in developing films, temperature also plays an important part. Higher temperatures result in faster development and shortening of the time the paper can stay in the developer before exhibiting fog. Lower temperatures work in a reverse

fashion. As the photographer experiments with various grades of paper he will find that some types will stand longer development before fogging, than others.

There are also limitations in giving long exposures and shorter development time, to minimize contrast. An exposure which will require the print to be jerked out of the solution in order to save it, cannot produce satisfactory results.

Ordinary acid hypo is suitable to fix papers. They should also be washed for a considerable time after fixing to insure freedom from hypo, especially if they are to be subjected to toning, in which case the presence of hypo will produce uneven tones. After washing they should be placed on the drying rack and allowed to become bone dry.

Many amateurs seem to find difficulty in obtaining flat prints. This is easily accomplished. Two boards about two inches thick are obtained as well as a number of large blotters. The prints are dampened on the back with a moist sponge, placed between blotters, and the whole then inserted between the two boards. A weight of 20 or 30 pounds is placed on the boards and allowed to remain there for 48 hours. When removed the prints will be absolutely flat. If the amateur desires to obtain a ready-made drying apparatus he will find the Willo Drying Press a simple and convenient means for drying prints and keeping them flat.

The Foth Derby Enlarger

This enlarger is rapidly gaining favor with miniature camera workers, being a precision apparatus offered at a remarkably reasonable price. It accommodates negatives up to $1\frac{1}{4} \times 1\frac{1}{2}$, and also smaller portions of larger negatives. It is easily manipulated, and is provided with a removable condenser, giving an extremely brilliant and even light. It is also provided with a highly corrected f:3.5 anastigmat lens, and makes enlargements up to nine diameters magnification. All metal parts are nickel plated steel and fireproof crystallized black enamel. As part of the equipment an adjustable red filter for placing the paper is supplied. The entire apparatus is sturdily built and rightly has the appearance of a precision apparatus.



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HOLLYWOOD, CALIFORNIA

Out of Focus



By Otto Phocus



We are very fortunate this month to be able to reproduce the above sepia which comes from the developing tray of James B. "Shack" Shackelford, the young fellow that has been a few places and seen considerable.

As you are undoubtedly aware "Shack" was chief cameraman with the Roy Chapman Andrews Expedition when they discovered the eggs on the Gobi Desert. These eggs were thousands of years old and, although very interesting from a scientific standpoint, they can not compare with some of the "eggs" we have in Hollywood. Nor with some of the "eggs" that have been laid in the picture business.

During his recent trip to the South Sea Islands for the R.K.O. Studios, he made another discovery that is very important to the motion picture industry—a native who can grow bananas on a microphone without grafting. The elimination of grafting by the studios has been desired for a long time and this may be the answer to it. At least it is as good an answer as any submitted so far.

It was Wednesday when "Shack" arrived on Thursday Island and discovered his boy (?) Friday or Saturday. This leaves Sunday, Monday and Tuesday to have some fun with. Well! They christened the boy Charlie and the best the natives could do with that name was Sharle, although most of the time he was called HeyU and at other times a few names that cannot be mentioned here.

The pay consisted of canned goods and old razor blades. It seems as though they were never able to issue Sharle enough razor blades, because he always showed up the next morning. The chain around his neck is "Shack's" idea and, as he explains, it is one way to keep an assistant at the camera while trying to talk to the director and eliminates the necessity of going to the corner drug store for your assistant when a follow focus shot is to be made.

Sharle was formerly a member of the Cannibal's Union and when asked why he was an ex-cannibal he re-

plied: "Umph gyph." When translated this means: "Who wants to be a cannibal when there is a motion picture company around."

The title of this picture when released will be SEA GIRL. If you will refer to the last October issue of International Photographer and peek at some of the stills submitted by "Shack," you will agree with me that you will certainly "See Girl(s)." Practically all of them.

HOW COME DEPT.

One of the studios in Burbank held a golf tournament recently and immediately after the contest the prizes were awarded. Imagine the surprise of the contestants when they discovered one of the cups had the winner's name already engraved on it and another prize winner was away on location.

DO YOU KNOW

That the C. C. C. was in existence in California in 1917. The Cinema Camera Club.

That Paul Perry radio'd from Peping, China, and is on his way to Saigon, Anam., and can be reached thru Thos. Cook and Son.

That Bob Miller is with him and doing nicely.

That they saw Chas. Clark in Shanghai.

That a certain asst. tried to borrow money from a certain organization to join another certain organization.

That Ira Hoke has gained 15 pounds. HI! HUSKY.

That Lloyd Knechtel recently addressed the British Kinematograph Society in London and showed the boys a few reels of his "Tricks."

That the Motion Picture Relief Fund actually gives relief.

That Maurie Kains operated the three color camera that photographed the Three Little Pigs.

That a cameraman can not be "forward" and operate his camera.

That if you don't think Lincoln was a big man you should see his statue in the Lincoln Memorial, in Washington.

That Buddy Harris is back, (but not at Universal) after being away for some time. My error.

That Eddie Gehler arrived in Hollywood in 1916 and expected to be here for some time. He has been here ever since.

That Alvin Wyckoff made a trip to New York for the preview of his picture, Joan the Woman, some few years ago.

That Harry Parsons had 14 years experience as a projectionist.

That Ray Fernstrom attached himself to the picture industry at the age of 14. Candy butcher in a "Swenska" theatre.

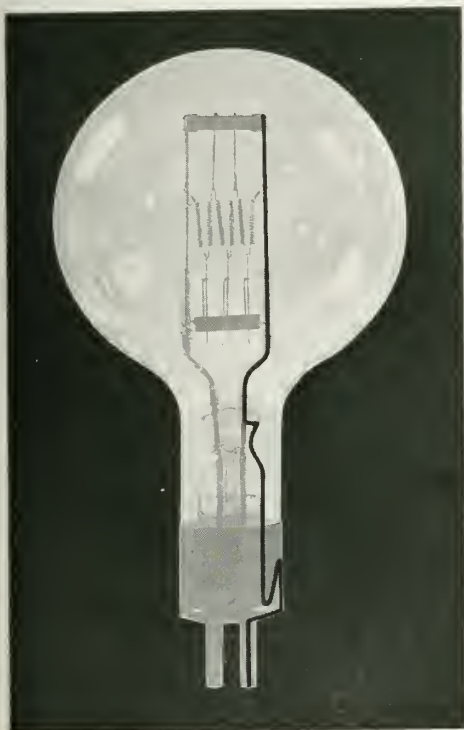
That in 1903 they double-exposed their backgrounds. See the "Great Train Robbery."

That "Lux" was the name of a camera long before it was something for the neck.

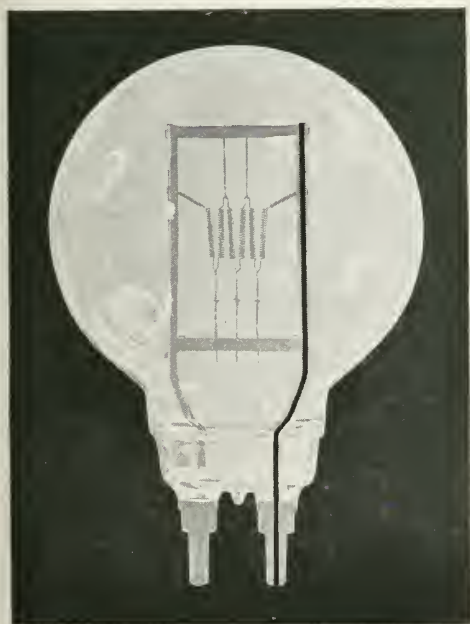
That there was a Twentieth Century Film Co. in That Lou Physioc wrote an article, "Twenty-Five Years of Motion Pictures," over 16 years ago.

That I hope he will be able to write another article "Fifty Years of Motion Pictures," and that I will be able to read it.

WHY GENERAL ELECTRIC DEVELOPED THIS NEW STYLE HIGH WATTAGE LAMP



OLD TYPE 5 KW LAMP



NEW TYPE 5 KW LAMP

WHEN the electricians shift lighting equipment from place to place on the set, the lamp in each reflector is inevitably shaken and jarred. This snaps the filament about as if it had been struck with a mallet . . . or were the end man in crack-the-whip.

What takes the shock of these blows? Suppose we follow on the diagram, the complex path they travel through the supports of one of the old type 5 KW lamps. Down multi-metal supports into a brittle glass stem, up through basing cement and then down to the prongs . . . with leverage and weakness increasing all the way. At any one of eight points, a break may occur, bringing premature lamp failure.

The movies brought a tough life to this lamp—tougher than any previously known. But G-E scientists, alert to motion picture requirements, began work on a lamp that could live it. They tried stems of different kinds of glass. They tried other experiments. The lamps *were* improved, but not enough. Gradually these experimenters reached one conclusion: great improvement would result only from the elimination of the glass stem . . . a part of lamp making since the days of Edison.

To accomplish this they turned to the method of fusing copper and glass developed in making a 50 KW lamp for Light's Golden Jubilee. But a year and a half of intensive experiment and test, without a single let-up, went by before G-E made this new 5 KW lamp available to you. In this new type construction, as the diagram shows, the channeled nickel filament support takes almost a straight line from filament to prongs. Stronger, more rugged, more accurate and better adapted to studio needs, this new lamp has been rapidly adopted by studio after studio.

Improving existing types of lamps constitutes only part of G-E research. Other groups of scientists and engineers are steadily developing new lamps for new requirements. Still other groups constantly test and check a definite proportion of factory production on all types of lamps. Such work breeds confidence. Little wonder that studios from coast to coast use G-E MAZDA lamps for all their lighting needs. General Electric Company, Nela Park, Cleveland, Ohio.

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—HOLLYWOOD—

TH YEAR

APRIL, 1934

VOL. 6

NO. 3



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One of the many beautiful settings for the great Warner Brothers First National Production "Madame Du Barry," starring Dolores Del Rio Reginald Owen playing male lead. Left to right: Grip, Harold Noyes; Chief Cameraman, Sol Polito; Director, William Dieterle; Assistant Cameraman, Fred Turzo; Chief Electrician, Frank Flannigan; Assistant Director, William Cannon; Stills by Bert Longworth.

This photograph shot exclusively for the International Photographer by Bert Longworth.

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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 6

HOLLYWOOD, CALIFORNIA, APRIL, 1934

No. 3

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A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing, Film Editing, Sound Recording, Projection, Pictorialists.

INTERNATIONAL
PHOTOGRAPHER

for the month of

MAY

will be a

SURPRISE
NUMBER

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be withheld.

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FROM PIGS TO PICTURES

The Story of David Horsley

By WILLIAM HORSLEY



David Horsley and one of his favorite elephant pals.

Each company had to get a camera by some means. It did not matter how, where or what. By this time Williamson in London had made cameras; Prestwich, also in England; Pathe in France, and Prevost, Gaumont in France, and also DeBrie and two or three others. But when you had secured your camera your troubles had just begun.

First, second, third and assistant cameramen were then unknown. The main guy next to the owner was a big, strong, husky fellow with a large pick handle. His duty was to stay at all times within six feet of the camera and as soon as any stranger appeared he spat on his hands, grabbed the pick handle and did his duty. His duty was to prevent anyone except the cameraman from getting a look inside to see if they were using the *loop* in the film.

Working under these conditions became so intolerable that in 1910 every company in the independent field got together and formed what was known as the Sales Company with headquarters on 14th Street, New York. Here every film sold was delivered by the maker and the Sales Company shipped it out C. O. D. to the buyer at \$100 per reel. When the money came in the Sales Company remitted \$95 per reel to the maker and kept back \$5 per reel. By this time the business had grown to such proportions that this \$5 per reel amounted to between \$5000 and \$7500 per week. The Centaur Company by this time was making:

One Western picture per week selling.....	35 prints
One dramatic picture per week.....	35 prints
One Mutt and Jeff Comedy per week.....	50 prints
Total prints sold per week.....	120

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Part II

*(Continued from
March Edition)*



William Horsley

Thus at \$5 per reel it was costing Dave Horsley \$600 per week. However, on account of never having had this money in his possession it really did not cost him or any of the producers a cent because it was just the same as if they were selling their pictures at \$95 each instead of \$100.

The purpose of this \$5 per reel was this. The Sales Company engaged the best firm of patent attorneys in New York and started suit to break the hold the Patents Company had on the motion picture business and, in case this was not possible, the scheme was to keep the case in court for four or five years at least, during which time the independents would at least be making a living and perhaps a lot of money. After three or more years, to the astonishment of all concerned, the Patents Company was licked on every count. Their \$2 per week royalty on each projection machine ceased and one by one those high and mighty monarchs of the motion picture business folded up and went out of business. The Edison Company, the Biograph Company, the Essanay Company, the Lubin Company, the Selig Polyscope Company and all the rest fell by the wayside and finally the last one of all, the Vitagraph Company, was absorbed by Warner Brothers and faded out of the picture. To repeat a little verse about David and Goliath, two old Bible characters:

"David had a little stone
No bigger than a button;
He threw it at Goliath
And it killed him dead as mutton."

In this case it was the much despised "washtub and sink" that rose up after many days and saved the picture business.

Now, there have been many claims as to who beat the Patents Company, each laying claim to that honor. However, the plain, simple fact remains that every member of the old Sales Company paid \$5 for every reel of positive film he sold and this money did the trick, and not any individual—neither Laemmle, Bill Swanson, Bauman, or Kessell, Mark Dintenfass, nor Dave Horsley, but each did his share towards the end sought.

Weather conditions became so bad during the summer and early fall of 1911 that it was impossible to make motion pictures in the vicinity of New York City. The camera depended entirely on sunshine and there just wasn't any sunshine to speak of. In despair Dave took his three companies and loaded them on the train and started for California.

On October 27, 1911, he started what was then the very first motion picture studio in Hollywood at the corner of Sunset Boulevard and Gower Street, using the old Blondeau Tavern for an office and putting up a platform in the yard, with muslin diffusers to kill the shadows. Here he operated a company under the direc-

tion of Milton H. Fahrney, who made one single reel Western picture every week; a company under the direction of Thomas Ricketts who made one single reel dramatic picture every week; and a company under the direction of Al E. Christie, who made one single reel Mutt and Jeff comedy picture every week. The negative was developed after dark on the old screen porch of the Blondeau Tavern, and sent to Bayonne, New Jersey, to the laboratory for printing.

This plant was operated by David Horsley until May 20, 1912, on which date the Universal Film Company was formed and this company took over every one of the independent companies then operating and each one took stock for his studio, laboratories and other picture interests. Dave got for his plant \$175,000 in preferred stock and \$204,000 in common stock in the Universal Company. He also was elected to the office of treasurer of Universal at \$200 per week salary, a lot of money in those days.

Within a short time the battle for control of Universal started and in July of 1912, less than two months after its formation, Bauman and Kessell withdrew their New York motion picture interest, after a battle in which no lives were lost although a lot of bad language and hard names were used. This battle, however, was only the start of the internal strife which now centered between Carl Laemmle and his faction, and Pat Powers. Each one wanted to be captain of the ship and you can't have two captains in command of one ship at one time.

This kept on for about one year, or until the summer of 1913, when Dave, whose stock carried the balance of power, sold out his interests of Carl Laemmle. Dave would not take any checks so they brought the money for the first payment over from New York in the back of an old auto touring car in one-, two-, five-, ten-, and twenty-dollar bills tied up in bundles.

I believe there was \$197,000 in this first payment and it took every employee of the biggest bank in Bayonne from three in the afternoon until after eight that night to count it.

The balance of the purchase was paid at the rate of \$5000 per month by notes of Carl Laemmle. If a note came due at the bank on Sunday the money was paid before noon on Saturday. They were not taking any chances.

With all this money Dave did what he had wanted to do for years. He took his wife and boy and went abroad. He visited the old home village where he was born and lost his arm. He traveled all over England, Scotland, Ireland, France, Spain, Germany, Italy, and all the rest of the European countries. He had so much money that it was too much trouble to go to New York eight miles away to get his \$200 check each week as treasurer of the Universal, so he resigned that.

By the fall of 1914 war had broken out in Europe and Dave had rested so much he didn't know how to spend his time. The Bostock Animal and Jungle Show was exhibiting in London. The British government needed the exhibition rooms to train English soldiers in, so they chucked the Bostock animals out into the cold gray London fog into a park.

The manager of the outfit, a Mr. Tudor, a big fellow about six feet six inches, took a boat for New York and someone sicked him on to Dave. Poor Dave, he still had more than four hundred thousand dollars left.

Dave fell for Tudor's scheme and bought the entire show. I don't know how many animals there were altogether, but there were 58 lions and two elephants among the rest. He brought them on a ship to Brooklyn and then by railroad to Los Angeles. The boat and railroad cost more than \$15,000 freight; the show, \$40,000. He leased the ground at Washington and Main for \$600 per month and spent \$47,500 on grandstands,



Reading left to right—fourth person, Vice-President Marshall, who made famous: "What this country needs is a good five cent cigar"; Mrs. Marshall; David Horsley; Mr. Tudor; Charles Fais; Captain Jack Bonavita.

arenas, cages, walks, and concrete fence before he opened the show in 1915.

His average daily overhead was \$225 per day for feed, trainers, ticket sellers, music, and so forth. The best day's intake was \$165. Some days they took in as little as \$1.25. Attempting to recoup some of his losses from the animal show he built studios on the ground and a laboratory and made about two hundred comedies with George Ovey. He made a great number of five-reel dramas, with Crane Wilbur, and "Stanley in Africa" pictures. By the fall of 1918 he was compelled to close and whereas he had started in 1915 with more than \$400,000 he left in 1919, just three years and one month later, exactly \$38,000 in debt.

What assets he had left he placed in trust with the Union Bank and Trust Company and from the sale of these assets they paid off 70 per cent of the \$38,000.

The loss of his resources was a sad blow to him, but the worst thing that happened was not the loss of his money but it took from him all his energy, his very life, and left him just a mere shell of the old Dave Horsley and he never was able to take hold again and come back. None except those who were intimately associated with him during those trying days of his beginning in the motion picture business know how great his spirit had been. Then, with nothing but his good right arm and without money he fought with his back to the wall for his very existence. Even his source of film supply was cut off. The Eastman Kodak Company, under their contract with the Patents Company and General Film Company were not allowed to sell him one foot of film, and he was compelled to import from England the negative and positive film made by the Austin Edwards Company. It was this same fighting spirit that caused him when weather conditions became so bad around New York to burn all his bridges behind him and gamble every dollar he could raise and take all his people to California, a strange land that he had never seen.

Hollywood owes to the memory of Dave Horsley more than it can ever repay. From the moment he started to make pictures on the old Blondeau lot Hollywood began to grow and by leaps and bounds, and soon became more famous than any other city of its size in the world. Cameramen, directors, and every art and craft connected with motion pictures owe more to Dave Horsley than to any other man connected with the motion picture business. His everlasting grit and fighting spirit overcame odds that would have defeated an army of ordinary mortals. On February 23, 1933, he passed away just 49 years from the time the pig had been the cause of his coming to America and finally getting into the picture business through his washtub and sink.

FURTHER NOTES ON MARINE PHOTOGRAPHY

By KARL A. BARLEBEN, JR., F.R.P.S.



ABOUT seventy-five per cent of the world consists of water. Is it any wonder that it holds certain fascinations for everyone who is fortunate enough to come in contact with it? The sea is most glamorous—to those who can see beauty in the various moods of the sea. The cameraist is particularly fortunate who has grasped the idea of picturizing the sea—and you may rest assured that most of them who live near or by the sea make the most of their opportunities.

Perhaps the most interesting thing about the sea is its moodiness—one day it is calm and serene, the next it may be a raging tempest. The changeability affords the photographer a new set of negatives every time the wind changes. He can live near the sea for years and never hope to exhaust its possibilities, even in that one locality. Secondly, the sea offers everyone some particular interest. Those who lean towards pictorialism will find it in all its glory by the sea. Those who want news, speed and action pictures will also find these qualities on the water—swimming, speed boat races, sailing, fishing. And lastly, just think of that salty, tangy sea air that you can breathe into your lungs as you sally forth in quest of sea pictures.

But to come to the point. Marine photography doesn't differ greatly from the regular run of straight photography. As far as equipment is concerned, any camera can be used to good advantage from the lowly Box Brownie to the expensive Graflex. Amateur movie workers, too, have in the water a most active subject. Rollers gliding upon the smooth, sandy beach or dashing themselves cruelly against rocky cliffs make most attractive subjects. In the still field, however, I personally feel that the miniature camera has the edge on most other equipment—and I'll tell you why.

When working on old man sea you must be prepared for anything and everything. Pictorialists are gluttons when it comes to punishment. I've known them to balance themselves on tiny rocky ledges with the breakers coming in full tilt, threatening to dislodge the photographer at any moment. I've seen them tumbled into the seething, foaming, icy-cold water, cutting their legs and hands unmercifully because of their dangerous positions. Do they care? I should say not—that is, if they can show results in the darkroom that evening as they develop their films. Whenever I see enthusiasts taking chances like these I'm reminded of the newsreel correspondent of the *International Photographer*, Ray Fernstrom, whom I knew in the days when . . . Back in Boston, that was. Ray has this same daredevil quality. Now you can well imagine how easy (?) a large camera would be to tote around on rocky cliffs and in caves. At least one hand is needed for support or balance. With the baby camera it is different—it can be tucked away in an empty pocket, although most photographers' pockets are usually bulging with filters, telephoto lenses, spare film rolls or magazines, and what not. But anyway you can see where the small camera is just the thing for marine photography.

On the wharves and on ships things are pretty much the same. Here one is required to climb about, over and under, in order to get just the right view-point. Won't you admit that the diminutive camera is the most practical? Then again, there is a real desire to shoot picture after picture. You can't help it, the urge is

too strong. With the larger camera you have to go easy with the shots, for they are costly. When shooting baby roll film or cinema film, the expense involved is not worth mentioning, hence the enthusiast may shoot away to his heart's content. This in turn means that there will be just so many more negatives to select from.

A filter is an excellent thing to use on the water. There will usually be clouds to be recorded, and the sky will want to be filtered so that a proper differentiation can be recorded between sky and water. For all practical purposes, a medium density yellow filter will do the trick or, if you want a real dark sky, use that most excellent of excellent filters, the "23-A." Of course this presupposes the use of panchromatic film. A good, fine grain ortho film such as perutz Fine Grain Special or Agfa Plenachrome will be found excellent, providing other than yellow filters are not found. If speed in the film is a consideration, forget it. On the water there is always an abundance of light except on real dark and stormy days. A speed film is superfluous.

A good sunshade should not be forgotten. In fact you will be sorry if you leave it at home. Take a good shade such as made by the Hollywood Camera Exchange, Solite, Woesching, Willo, and others. Most of these, besides acting as efficient sunshades are also filter holders. It must be remembered that the water as a rule reflects an abundance of light—so does the white, sandy beach if you happen to be working on such territory. This extra light should be prevented from reaching the camera lens, and the only way to accomplish this successfully—and without bother—is by using a sunshade for each and every exposure.

The light may be somewhat deceptive on the water due to just the reflection that was mentioned previously. A good exposure meter will do wonders to keep the worker straight on this point. In general, it might be said that the complaint is usually over- instead of under-exposure on the water. A small lens stop, even when using a comparatively heavy filter will ordinarily be required, yes, even with a slow film.

Shutter speeds may give a little trouble to the begin-



The real camera enthusiast laughs at hardships and difficulties—he finds a way to get the picture he wants. By George V. Moran.

ner on the water, because they should be used in accordance with the subject being photographed. To illustrate, take speed boats. Here a quick, snappy shutter speed of between 300 and 500th of a second will be found necessary. This is because of the movement of the boat itself. When on the seashore, photographing spray as

it is caused by waves crashing against rocks, one would ordinarily judge that a fast shutter speed is necessary because the spindrift does move with considerable speed in the air. Yet if it is shot at a fast shutter speed the result is a lifeless record of a white mass hanging in mid-

get a photograph that will delight your heart. A pan film and a "23-A" or "A" filter will do a wonderful job, or, if you have ortho film in the camera, use your yellow filter, which will do a fair job considering the material you are working with. If you are out in the



Left—Ocean liners offer their majestic appearance to the cameraman, by George V. Moran; The sailboat is still the queen of the seas, by C. J. Lewis; "The Lighthouse", photo by Karl Barleben; below—even the canals in Europe offer material for the camera, by Karl Barleben; "Clouds Behind the Masts", Leicaphoto by C. J. Lewis (Miami).

air. Unnatural as can be. In order to inject life and animation into the spray, slow the exposure down a bit. Experience seems to indicate that from 1/25th to 1/75th second exposure produces the best results. Try it yourself if you are doubtful. The spray may then reveal a "drag," but look at the print! You will catch the true-to-life action as the eye saw it. The picture will radiate action, life.

Then we come to when to snap the shutter. Only experience can teach this, for there is a decided knack in knowing how to judge the spray at its height—and as a rule the shutter must be released a fraction of a second before the big moment to compensate for the delay of the shutter mechanism in getting into action. This may be splitting hairs, I'll admit, but what a difference it really makes.

A low view point—when possible—is suggested for waves and spray on the coast. A high position for the camera will have a tendency to dwarf the waves and spray. Get low down and shoot slightly upwards and see how massive and impressive they will then be. In order to get the camera low, enthusiasts get right into the water, as was indicated before, holding the camera barely above the surface of the water. A tripod is absolutely out of the question when working in swirling water, hence we again must mention the miniature camera as being the ideal instrument for marine photography.

We mustn't overlook the possibilities of sunsets on the water. Pick out a smooth, sandy beach. Wait until the tide is low, having gone out during the afternoon, thus leaving the sand wet. Then catch the red, setting sun as it glints and gleams on the wet sand. You will

water in a boat, catch the narrow ribbon of gold as the sun sets, throwing the golden pencil of dancing light across the water. Not only will such scenes inspire you personally, but your camera will also be delighted with having been made to record such scenes that thrill artists.

Ships are always good subjects for your camera. Each one has hundreds of angles to photograph, and the worker is cautioned not to shoot hasty exposures—rather wait until both the angle and the light are favorable. The giant liners never fail to offer material for countless exposures. Their hugeness alone can be worked up into pictorial material. Then there are sailboats. By all means catch those white sails, place them against a cloud-flecked sky, and see if you don't get a picture. A filter will of course be found necessary to differentiate between the white sails and clouds, and the blue sky. At sundown, wait until the sails entirely hide the sun—a true backlight shot. With the proper filter and correct exposure you will have something.

All in all, the cameraist who lives near the water and doesn't shoot plenty of film on or near it is missing half the fun of picture-making. Some folks travel hundreds of miles just to get a crack at it with their cameras. They know and appreciate it. Do you make the most of your opportunities?

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ART IN MOTION PICTURES

By MAY GEARHART

Supervisor of Art in the Los Angeles City Schools



WHEN Mrs. Leo B. Hedges, as state chairman of the P. T. A. film committee, asks for a talk on the relation of the screen to art education, I am again impressed with the sympathetic attitude of this organization toward all phases of education. The P. T. A. is an agency concerned not only with the physical needs of the boys and girls but also with their moral, cultural and aesthetic welfare. To use Mrs. Hedges' own words: "We are interested in the art consciousness which is projected into the mind of the child through being exposed to the screen."

We agree, do we not, that the moving picture presents art qualities in a most illuminating manner. The question that arises is this—to what extent are our young people conscious of these art values? Are they profiting by their screen experiences?

I have presented this problem to junior and senior high school pupils to ascertain if they went to the movies solely to enjoy the drama or if the art, the beauty of the setting contributed to their pleasure. The consensus of opinion seemed to be as follows: "You don't notice beauty in the setting if it's there, but if it isn't, you notice the lack of it right away." The students reminded me that when a film dating back to the early history of the industry is revived people shout with laughter because of the crudities, the absence of aesthetic values. There is a conscious recognition of the lack of art.

The history of the movies repeats the history of many products in the industrial world in this respect. The automobile is the obvious illustration. At first the manufacturer was concerned only with making the machine go. The world was interested in the miracle of invention—art was ignored. Now we choose our model with careful consideration of line, color and structural design. As with the auto, so with the movie. What once excited us was the scientific aspect, the wonder of seeing things move on the screen. Today we are accustomed to this miracle of motion. The novelty has worn off and we demand newer and more varied stimulus. In answer to this demand the screen is recognizing the place of art and inviting our interest by offering pictures of compelling artistic significance.

The contribution of sound helps to intensify the aesthetic effect. Do you remember how day broke in the opening scene in *Over the Hill*? The faint rustle of leaves, the little chirp of birds, the far-away call of a rooster, the growing volume of sound as the world awoke combined with the charming pictures of the village achieved a fusion of arts which lingers in the memory.

Another satisfactory film which meets the unqualified approval of young audiences is *Be Mine Tonight*. The plot is slight but it is harmoniously combined with melody and beautiful scenery. Young people enjoy the charm and quaintness of the foreign setting. They say, "It's like traveling abroad." Here we have a movie with no sensational appeal and no sordid use of sex but of definite entertainment value to young people of every class.

The *Three Little Pigs* is another example of popularity absolutely unaided by any so-called box office appeal of cheap sensationalism. It is a wonderful combination of art, music and sparkling humor presented through the medium of an old, old folk story. Films such as *Chang* and *Grass* present art features and edu-

cational influences of rare value. Boys and girls respond to the charm of travel films or pictures screened in foreign countries and in these films where the love interest or gangster element is not present, young people consciously enjoy the beauty of the compositions. In *Night Flight* the trip over the Andes leaves a distinct sense of thrilling personal participation.

Such films as these I have mentioned show that visual art has advanced at a tremendous rate but beauty of composition is not an adequate rival and can not compete with the interest of young people in the human element, that is, the plot of the play.

Do you recall this bit from Miss Young's recent novel, Jennie Wren?

The sun can not be faced.

The moon floats by indifferent and aloof

But the stars have messages for mortals.

Jennie Wren's stars were in the sky but the stars on the screen have even more compelling messages and the average young person is not conscious of art settings when his favorite film star is in the ascendancy unless the action of the star is consistently harmonized with the beauty of the stage set. Of tremendous importance in the development of boys and girls are these messages from stars. We are assured that "the young mind is as absorbent as blotting paper." To what extent are fine standards in living and love of beauty being presented and emphasized on the screen. Professor Neumann says: "The test of a book is this—the kind of thinking it calls for after you have read the book." Is this not also the test of a movie—the kind of thinking it stimulates, the response it arouses?

We read the recent report of Henry James Forman entitled *Our Movie Mad Children* and we wonder who is responsible for this serious situation that gives opportunity for boys and girls and even very young children to see and hear objectionable aspects of life through the cinema. Is it the parents' fault for allowing their children to go to shows? Is the producer alone the offender in arranging these programs where often a cheaply sensational picture is tucked in next to a highly desirable and deservedly popular film?

The evaluation of films presented weekly by the P. T. A. Committee is a most important contribution in this connection. Does the public demand sensational pictures that extol crime, excuse drunkenness and emphasize sordid sex expression?

Or do they flock to *Three Little Pigs*, *Over the Hill*, *Voltaire*, *Night Flight*, *Chang* because they like them? Here we have the moving picture as the greatest instrument for presenting art and educational values as entertainment that the world has ever known. Is it not a challenge to this industry to rise to its best possibilities and shoulder this obligation to educate in the finest interpretation of the term?

Obviously, however, the whole burden does not rest on the screen. We all know that the extent to which we benefit from an experience depends on what we take to it. That is we are prompt to recognize in any situation qualities which reflect our own particular interest.

John's father is in the rug business. John reports to his art appreciation teacher that he notices immediately the use of rugs in a setting. Is the rug appropriate? Does it add to the appearance of the room? Another boy whose father is in some work connected with lighting

is absorbed in studying that interest when he goes to a show.

The student whose uncle deals in antique furniture said: "I always notice if they make a good combination of the antique and modern."

The students in the French class announce "Red Head" is the grandest play ever! Don't miss it." Regardless of the foreign language interest the rhythmic charm of the little wedding procession across the field will remain a lovely memory. The sixteen year old boy comments on *Voltaire* as follows: "Gosh, there wasn't enough sword play, but I did like the costumes." *Voltaire* is a play of wits, not swords and this boy was slightly bored, but his comment shows that when interest lags in the play for personal or emotional reason, *art picks up the lag*.

When mother inquired of little Jane how she enjoyed the film called *Paddy the Next Best Thing*, Jane said: "I surely did like it. You see in all the parts I couldn't understand there were always things so good to look at." If students have studied history, of course they appreciate a historical setting.

I predict that the big hats, great muffs and charming costumes in *Berkeley Square* will thrill the hearts of girls who have been studying *Vogue* recently. Surely no older student will forget Mrs. Siddons after enjoying

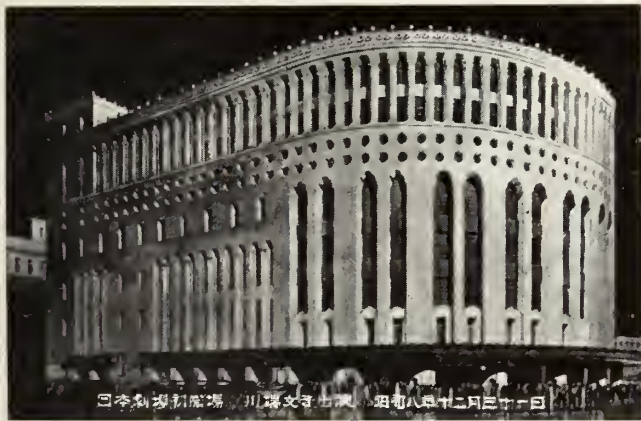
the episode of Reynolds and the portrait. The art interests already aroused in young observers will receive fresh stimulus when the screen offers a similar or related contribution of aesthetic significance. However, you need not expect the cinema to do the whole job in this quest for beauty. Do parents and teachers find opportunity for discussion with boys and girls of the fine art values in a screen production or is the whole comment limited to the plot? Do we evaluate the play in terms of sincerity and honesty or only in regard to sensationalism? Are we taking advantage of and using the art of contribution of the cinema? Are we teachers definitely calling the attention of students to distinguished art qualities in composition, in dramatic use of dark and light and in rhythmic pattern? Do we prepare students to discover and enjoy these art qualities for themselves when they attend the movies? Is it not true that in the movies the growth of the drama has quite failed to keep pace with the advance in art values?

The point is not that all plays need to be emasculated or reduced to adolescent level. Our plea is for the beauty of sincerity in the representation of life on the screen. The cinema has its errors and its insufficiencies but we accept it as the most popular diversion of the whole world and we recognize its possibilities as an increasingly powerful and valuable agency in art and education.

"NEWS FLASHES FROM JAPANESE MOVIEDOM"

By HARRY A. MIMURA

Member of International Photographers



EVEN if there is a day the sun does not come up, there is not a day that the camera does not grind. THAT IS HOLLYWOOD. And that same fashion crossed the Pacific Ocean and it applies to the Japanese film industry, too. The major studios in Japan are working in full capacity with five to ten units at the same time and only a small number of people complain of their "between picture" dullness. Although sound equipment is but slowly being installed, the percentage of the talkies against the silents is increasing rapidly.

The day has come for the Japanese studio officials to face the problem to choose the best equipment on the market to produce better pictures in every respect. The first problem is how to replace their old cameras when it comes to making the talkies. There are two competitors in the Japanese market at present and quite a difference in price between the two cameras, but now is the time that they should send their best salesmen to the Orient.

Recent development in studio equipment brought many

up-to-date mechanical devices for the camera department. From "high hat" to "boom" are built in some studios and the cameramen are lying on the floors to shoot up in one moment and swinging high from one corner to the other the next moment. The time when some cameramen jumped from a tree while grinding the camera to get certain effects, has gone and the Japanese cinematographers are heading for the last round-up of the modern "gadgets." This will save more cameramen's necks than any spring mattress.

The money exchange between the dollar and the yen is so bad that they have to pay 20 sen a foot of negative film imported from this country. It is like paying 20 cents a foot here. The chemical research work has been under way for the last few years and they are now already on the market since the latter part of last year. The Eastman or the DuPont positive films are six cents per foot.

The State Department put new regulations in effect to help and censor any newsreel pictures taken to be shipped to the foreign countries. It had been my cry for the last few years that it come to this. Many a newsreel cameraman shot unpleasant events and backgrounds which caused hostilities and misunderstandings toward the Japanese nation. If I send a film shot around the Plaza district to Japan and explain that it is a Los Angeles street they would not know the better part of the city.

A. E. F. MacInerny, sound engineer of the Western Electric Sound System at Tokyo, is working at the Nak-katsu Studio, one of the largest studios, as the only foreigner on the set. Two years ago when the writer worked together for the first W. E. talkie there, his knowledge of the Japanese language was so poor that I had to work as an interpreter as well as being the cameraman. Mitsuo

(Turn to Page 31)



SYNTHETIC EARTHQUAKES MADE TO ORDER IN THE MOTION PICTURE STUDIOS

By PAUL R. HARMER

NATURAL publicity such as an earthquake is quickly taken advantage of by showmen and we have the best in the business here in Hollywood, but making a natural cataclysm perform on schedule, so the world may see for itself just how a major earthquake looks in action, is a problem attempted only by the world's greatest optimists. They do it and it is genuine, except that the casualties get well immediately, when the directors shouts "cut."

It is true that some companies have taken advantage of the wreckage caused by earthquakes, but in this article we are concerned only with the ones where moving picture stars and actors are woven into a series of incidents and adventures, during the filming of a major motion picture production.

The fact that THE INTERNATIONAL PHOTOGRAPHER is a professional and technical magazine and its circulation is almost entirely confined to the workers in the motion picture industry is the only reason such an article as this can be attempted.

Credit should be given where it is due and according to my idea the following named men are foremost in this particular work: Fred Mann, William Davidson, William Teel, Roy Jones, Vernon Walker, Don Jarvis and Eddie Haas. They have all taken direct supervision of the actual erecting and demolishing of sets used in the series of earthquake pictures now being exhibited.

The photographs shown here are by courtesy of the Twentieth Century Productions and made by Fred Archer.

The first type of set to be considered is the interior,

tion and the set literally quakes before your eyes; a twelve horizontal motion gives a tremendous effect on the screen, walls crack in conspicuous places as illustrated in Figure 2 and men stationed above the set release debris of all kinds. If this action is continued too long the set would fall down because of structural failure. Sometimes precautions are taken by tying a cable to the top of the wall and then to a truss in the roof of the stage. This gives a swaying effect to the wall, which is partly suspended.

The floors are made in sections and operated separately by different groups of technicians. This literally tears linoleum apart and causes large cracks in the floor. Furniture is pulled over with wires and in a few seconds a beautiful interior set is in shambles.

Exteriors are more complicated and dangerous, great walls of solid brick and masonry crash with a roar, people and traffic rush from cover to cover and caution must be taken that the paper bricks and ground cork hit the people. It might be serious to have them struck by the solid debris. Only the most experienced technicians can be trusted with scenes of this nature.

Walls falling outward, such as shown in the picture, are weakened on the line of breakage and are either pushed out from the inside of the building or are pulled out with a cable attached to a truck; surprising as it may seem to some people, a cable one-quarter to one-half inch in thickness is unnoticed on the screen when the camera is set for a long shot.

Figure 3 illustrates how a solid masonry wall is supported by hinged posts, called weak knees, and when the cable is pulled the ends of the wall drop, causing the cen-



Left to right: (1) Realistic rescue from the ruins; (2) House tumbling to ruins; (3) Earthquake victim caught in a crevice in the concrete wall.

because most people are inside a building when an earthquake starts. As illustrated in Figure 1, the set is built on rollers and tied to the floor with heavy steel springs. The ends of the floor joists are extended to a series of handles outside the picture angle, where a group of electricians operate these by giving a quick pushing and pulling motion. After the first big push the springs take up the mo-

ter to pull apart, forming a breach.

Figure 4 illustrates how a crack in a street is caused to open and close again on somebody's legs or body, while debris is toppled on them from some crumbling building. Here they are helplessly held and crushed to death right before your eyes, as the girl in the picture lying on the sidewalk.

Another way of bringing an entire building down is to make a complete wrap once around it with a heavy cable and securely fastening one end to a post or dead man. The other end is fastened to a heavy truck, which drives away and the cable literally cuts the building in two. The effect is tremendous, various parts giving way and the

Grips and electricians operating reflectors and lights, explosions, every little detail caught by the moving film with master photography in every frame.

The *sound engineers*, with microphones mounted on booms and even carrying them in their hands, moving in close and back again to get the best results.

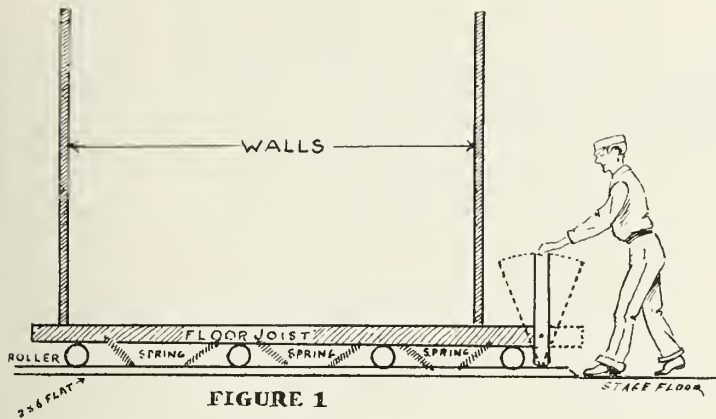


FIGURE 1

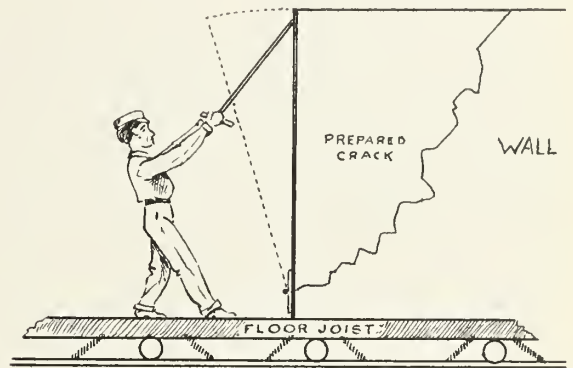


FIGURE 2

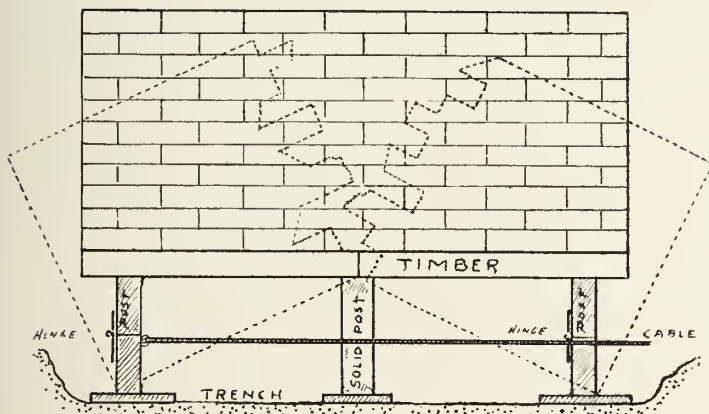


FIGURE 3

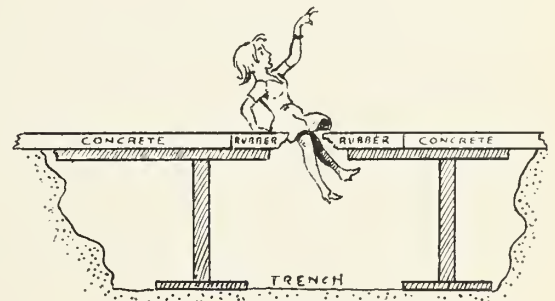


FIGURE 4

sounds accompanying it are very real.

The *cameramen* are plenty busy while all this is going on; extra cameras are placed at every point where a camera can be stationed, some on high parallels on the very edge of a high breakaway wall, some behind walls to get the action of what the people inside the building see, as the walls crumble and leave them perched on the ends of the floors with the furniture sliding out the breach and into the street. Cameras buried in pits under the sidewalk, shooting straight up at caving and buckling masonry. Cameramen with Eyemos, seated in cars which are being driven up and down the devastated area, adding their part to the confusion of people and traffic, water shooting up from broken water mains, fire breaking out and deafening

moving them quickly to help the cameramen "put it on the film" (studio vernacular.)

Still photographers with an 8 by 10 still camera in one hand and a Graphlex in the other, getting the choice action stills, the kind that sells the picture to the exhibitors and the public.

The *director* pushing signal buttons, waving his arms and making pantomime to the actors who, poor fellows, are scared to death for fear some falling object may not be timed just right. Oh, Boy, anybody who has gone through several of these earthquake pictures is entitled to be jumpy and jittery when he feels the earth tremble just a little.

ACADEMY RESEARCH COUNCIL

Samuel J. Briskin, Chairman of the Research Council of the Academy of Motion Picture Arts and Sciences, recently announced the full membership of the various subcommittees which are to carry on the cooperative technical program of the Research Council. Members of the subcommittees, selected for their technical qualifications and knowledge of studio practice in relation to the projects under way are:

Subcommittee on Establishment of a Uniform Reel Length
(1700 Foot Reel)

J. M. Nickolaus, Chairman; A. J. Geurin, J. J. Millstein, and S. J. Twining.

Subcommittee on Improvement in Release Print Quality

L. E. Clark, Chairman; Gerald Best, Harris Ensign, J. G. Frayne, Fred Gage, Harvey Giffen, A. J. Guerin, E. H. Hansen, Franklin Hansen, Emery Huse, Michael

Leshing, John P. Livadary, Hollis Moyse, J. M. Nickolaus, George Seid, Douglas Shearer, Theodore Soderburg, and R. C. Willman.

Subcommittee on Revision of the Standard Release Print

S. J. Twining, Chairman; John Aalberg, Sidney Burton, Harry Decker, Lester B. Isaac, and Harry Rubin.

Subcommittee on Establishment of a Uniform Screen Illumination in Studio Viewing Rooms

John Aalberg, Chairman; Emery Huse, Hollis Moyse, and William Mueller.

Silent Camera Subcommittee

Virgil Miller, Chairman; John Arnold, John Boyle, John L. Cass, William Eglinton, Bert Glennon, Lorin Grignon, Ray June, Kenneth Lambert, Grover Laube, Lewis L. Mellor, K. F. Morgan, Emil Oster, William
(Continued on Page 26)



PART of the STORY of LIGHTING

By
EARL THEISEN

**Honorary Curator
Motion Pictures
Los Angeles Museum**

THE most important of the dramatic devices of the motion picture is light. Light and shade are the most vital of the cinematic tools.

Emotions are literally painted with light. George Raft, for example, is depicted in love by a special soft lighting in one scene and in the next, through the use of a harsh light, he is a menace. Pastoral and spring-like effects are the result of soft, shimmery "catch light" and after changing the lights on the same set, it becomes a suitable setting for any villainy.

The flashing and uncertain lighting of the mystery picture gives rise to fear. Menace is portrayed by "hard" lighting the features. Any desired reaction can be gained by the light artist.

At first the motion picture depended on sunlight for illumination. All the pictures were taken out of doors. Edison constructed a studio in 1893 on rollers that would pivot to follow the sun's course and three years later Biograph in what was equivalent to their first studio built a revolving device on a steel structure that kept their setting always facing the sun.

The use of sunlight did not permit much artistry. The picture makers then were concerned with the difficulty of getting enough light to record their photographic image and not with a beautiful or dramatized photography.

The first successful use of lights in the motion picture was the Jim Jeffries-Tom Sharkey prize fight, November 3, 1899. William A. Brady, who promoted the bout, approached the Biograph Company with the proposal that pictures be taken. Hitherto experiments to use light had been unsuccessful. Biograph, ever ready to improve their pictures, decided to try.

They tried. Billy Bitzer, the cameraman, along with assistants hung about 400 modified street arcs over the arena. Under this blinding light and heat, the fight went its way for 25 rounds. While the fighters broiled, the Biograph "got" the pictures.

Back among the fight fans, unknown to Biograph officials, Albert E. Smith, too, was getting pictures with his Vitagraph camera. He figured it a good business stroke to avail himself of the elaborate Biograph preparations. He was right, though Biograph did not think so when they found out. After running up and down some alleys Smith finally got his pictures to his laboratory.

He finished them and hung them up to dry and it is said that another aspiring movie magnate in turn stole them from Smith.

The Vitagraph was finally given a print from which they made money. The Biograph's did not, since the Vitagraph had beaten them to the screen. That is part of the motion picture story.

Albert E. Smith with twinkling eyes remembers these dark intrigues which were the movie industry then and which weren't really sins.

The difficulties and heat in the use of artificial light in picture making seemed unnecessary. People were pri-

marily concerned with photographs in motion and any refinements, particularly expensive ones, were not to be considered. Soon the genus movie fan tired of this stuff and demanded a narrative content. The films had to say something.

To achieve the story film, there were two independent forces at work: Science and Art. While Art was using sun and makeshifts at hand in order to keep pictures in demand, the scientists were improving.

In many of these improvements Biograph led. Lighting was one of the cinematic devices in which they pioneered. In the *Scientific American* of July 1, 1905, is an account of a film made in the New York Subway in which Cooper Hewitt lights were used. The lighting equipment comprising a generator and 72 Cooper Hewitt tubes, were set on a flat car and on another car was the Biograph equipment. According to the *Scientific American*, the 54,000 candle power lighting unit being pulled through the station and subway presented a magnificent spectacle. According to George E. Van Guysling, then the manager of Biograph, the glaring light flashing by presented an unholy spectacle and the persons seeing it acted accordingly.

F. A. Dobson was the cameraman. He had a special high speed camera which photographed at the rate of 900 pictures a minute. It was mounted on an iron framework.

Very little was done in the way of artificial lighting for the nickelodeon picture. In these theaters the audience paid as a rule only five cents to see several pictures. They were victimized. The lighting of the picture at times was so poor the audience could not tell what it was supposed to represent.

It was necessary to have "spielers", or in other words, "explainers" who stood by the side of the screen and made apropos explanatory comments. We hear so much about the lurid themes today; perhaps they were as bad then, but the public couldn't be sure.

Again Biograph came to the fore! They were the first studio to install lighting equipment. When they moved from their first studio on the roof of the Roosevelt Building, at 13th and Broadway, to the famous "Brownstone" at 11 East 14th Street early in 1902, they equipped it with 36 Bogue arcs. These arcs ran on direct current and were originally designed for stereopticon projection. About six months later the arc lights were replaced with two banks—eight tubes to the bank—of Cooper Hewitt lights. Within two years this number of banks was in-



Showing six units at work under the large glass stage at the old Thanhauser Studio. Note the "Kleiglight" in the foreground. Photo courtesy Loffland Book Store.

creased to eleven. F. A. Dobson, seen about Hollywood today, was a cameraman for the Biograph on this set.

In 1908, according to Percy Higginson, an engineer for the Biograph, and with the Consolidated Laboratories now; "42 tubes were used to light a set, 10 on each side on the floor and 12 were hung overhead." Arc lights were used for highlighting.



The Jesse Lasky Studio, about 1914, using the overhead diffusing screens. Photo courtesy Paramount.

"The New York Hat," directed by D. W. Griffith, starring Mary Pickford and Lionel Barrymore, was made during this time as was "The Leatherstocking Series," which starred James Kirkwood, Arthur Johnson and Florence Lawrence.

When they moved into their new studio in 1914, they had well over 1200 Cooper Hewitt lights. These were distributed over four sets; the sets being housed in one large glass enclosed stage.

The vogue of using lights for the motion picture dates from about 1910. The demand for a large number of pictures became so great that the picture makers found it unprofitable to depend on sunlight around New York where most of the pictures were being made. For reasons of sufficient light and not quality, they started to migrate to Florida and the West looking for a perpetual sun. Eventually they heard about the one in California.

During the period of 1910-15, there was a general adoption of the artificial light, it being used only when sunlight was uncertain. Besides the Cooper Hewitts which were used only in the larger studios because they were fragile and could not be readily moved, the Aristo and Kleigl arcs were the earliest motion picture lights to be used, though there were many other lights that had some use.

Most of them were of the 90-volt, 25 ampere capacity and were either of the closed or open variety. They hung over the sets and resembled street lights.

The most prominent of the lights was the "Kleigl-light." They had first been made as a stage light in 1896 by Anton T. Kleigl and A. H. Guendel, who on February 1, formed the Universal Stage Lighting Company. A year later this partnership broke up and Anton Kleigl joined his brother, John H. Kleigl in a partnership which endured until the decease of Anton Kleigl in May, 1927.

Before the Kleigl-light was made, practically all stage lighting equipment was made in Europe. Very shortly the theatrical world recognized the Kleigls as leaders in the art of theatrical and spectacular lighting.

In 1903 they rewired and electrically equipped the Metropolitan Opera House. One innovation installed here was a "dimmer." Previous to this it had been the custom to pull the main switch and plunge the auditorium in darkness at the beginning of the performance; now the center chandelier gradually dimmed.

Their first lights, made for the motion picture in 1908, were 25 ampere arcs. With the passing years, they perfected an entire line of electrical equipment for the industry and in 1915 they introduced single and double arc floor units which could be rolled about. For the first time it was possible to take pictures with a portable arc light. The picture makers, whether large company or small,



Bing Crosby and Carole Lombard in "We're Not Dressing," showing the present illumination methods.

were no longer dependent upon sunlight. It was now possible to take pictures by artificial light outside the studio.

By 1915 they had arcs up to 200 amperes. The first spotlights, small arcs for special purposes such as local lighting to create the burglar's flashlight effect, floor or table lights, etc., were introduced by them. A list of the studios which they served in 1915 would be like a "Who's Who" of the motion picture.

The word "Kleigl-light" was first used the latter part of 1902 as a telegraphic code word.

The Selig Polyscope Company came to California in 1908 and a year later built the first California studio at Edendale. Even though his stage was glass enclosed to take advantage of the sunlight, he used the Macbeth Arc-light for many of his pictures. The Macbeth Company had been making street arc lights and mantles for the gas street lights.

The lights were anchored to large steel frames on a track and were moved and lowered by cables.

One of the more noted Selig pictures of this time was the "Cowboy Millionaire," starring Tom Mix.

Eddie Kull, Selig's chief cameraman, first used the Kleigl twin side arcs in 1913. Too, at this time many of the Cooper Hewitt "Quartz Lights" were used. This was a short mercury arc tube mounted in a porcelain reflector, having a distinct advantage over the longer and more fragile tubes.

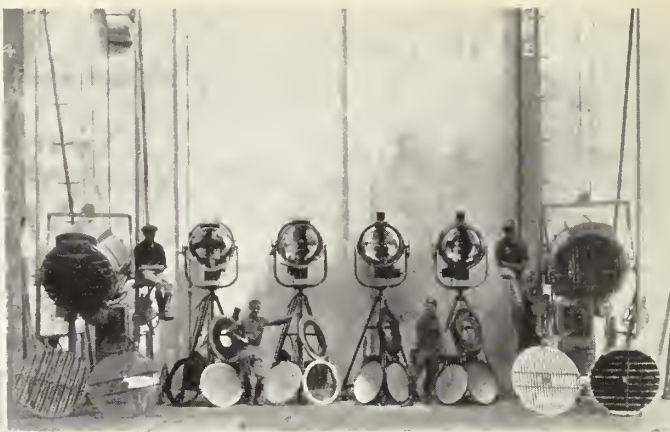
"Back lighting" was an innovation in 1913. In was tremorously tried by progressive cameramen amid executive grumblings as an unnecessary waste of time. Time was important; it was necessary to make two single reels a week and the loss of time in "silly" lighting was not to be tolerated.

That does not refer to Selig. It seems for some reason he was not as other movie magnates. As proof Eddie Kull again recalls an incident that seems hard to believe. One Saturday at something less than fifteen minutes past one o'clock, Selig wandered out on his stage and saw our Eddie busy at work with the "company" trying to finish the picture.

Contrary to all movie rules and regulations, "Selig got sore as—plenty sore, because the company was working overtime." In no uncertain terms he informed Eddie that people wanted their Saturday afternoons off and he wanted it understood that the afternoon started at exactly



Claude Harding and F. S. Mills with Kleiglites at the old Lasky Studio. Photo courtesy C. L. Gregory.



Mole-Richardson "Inkies" (incandescent) used at present in all studios. Photo courtesy Paramount.

one o'clock. Eddie Kull was squelched each time he tried to explain that the fifteen minutes saved Selig \$500, because the picture would be finished and the "company" would not need to be called back Monday morning.

Another company, in contrast, worked so long the carpenters would open the windows around midnight and start banging on whatever would make the most noise. The neighbors complained to the police.

The "Winfield-Kerner" was extensively used for a number of years. Roger Nauman, while superintendent of construction of the Louis B. Mayer Company in 1920, used the "bungalow" (spotlight) and "broad" (double side arcs) extensively. They were the vogue then. One of their heavy spotlights has been known to have fallen off a parallel and not break.

The Winfield-Kerner Company was organized in 1911 and started to make engravers lights. A year later they sold some arcs to a small independent company and shortly thereafter the Kalem Film Company bought a few. Otto K. Olesen, who is distinguished by being the one to light the famous Hollywood previews, started as a Winfield-Kerner man in 1912.

In 1919 Olesen formed a company which made electrical equipment for the motion pictures. In 1924, he bought up the Winfield-Kerner Company.

Many will recall the "Wohl", an arc made in Germany which enjoyed a certain popularity because it was light in weight and very efficient. It was brought to this country in 1916.

The "Creco" arc was first made in 1919 by the Chamberlain Reynold's Electric Company. Peter Mole and Elmer Richardson were with Creco. A year later this company sold out to Bert Sylvester.

The first "Sun-Arc" was made by Frank Fair as a large 36 inch light in 1918. In a few years this form of arc was to be needed to light the large sets which were picture by picture increasing in size.

One of the earliest of the "Rotary" arcs was made by Clarence Ashcraft for use in filming the Goldwyn picture "Earthbound," which was released August 15, 1920. For this picture he made a dozen arcs. Later he formed a partnership with Brown to form the Brown-Ashcraft Automatic Arc Company, which dissolved about five years ago.

The "Rotary" arc was an achievement. By rotating the positive carbon, it was possible to maintain an even crater and to directly face the condenser with the hot point with a higher illumination and a saving of about 20 percent in electrical voltage. The "Rotary" largely replaced all other forms. Because of the patents controlled by General Electric, all the "Rotaries" were licensed by them.

The first attempt on record to use Mazda lamps was a series of tests conducted by E. G. Ullman for Universal films. That was in September, 1913. The lamps of the

1000 watt daylight blue variety were anchored without reflectors to strips of wood. Five rows of these were suspended about ten feet overhead.

Mack Sennett in 1915-16 installed Mazda daylight blue lights and after making a series of tests photographed some pictures with them.

The Mazda was not successful, however, because they were breakable and their actinic quality was not suitable to the photographic emulsion of the Ortho negatives then used. After the advent of the panchromatic emulsion, it became desirable in the interests of better photography to use the Mazda. The arcs had been strong in their blue light content, and the early pan emulsion was more sensitive in the red end of the spectrum, which would result in a condition that would be difficult to balance. The adoption of the Mazda largely solved the problem.

With the introduction of the Eastman panchromatic emulsion, after a series of experiments conducted by Emery Huse and Ned Van Buren at the Eastman Kodak Works in the spring of 1927, the attention of the industry was directed to the necessity of bettering the light so that full advantage could be taken of the new photographic emulsion. The Academy of Motion Picture Arts & Sciences, in collaboration with Warner Brothers' Studio, who furnished the cameras and studio space, the film manufacturers who furnished the panchromatic raw stock and General Electric who furnished lamps, conducted a series of tests with Mazda lamps. The cameramen, after completing the experiments, which were conducted in May and June of 1927, compared results.

Peter Mole and Elmer Richardson had formed a company in March of 1927 and had by the time these tests were completed some 5 kilowatt equipment which was used.

Their first lamp was a "broadside" with two T20 projection lamps, which proved unsatisfactory. They changed to the "pear-shaped" lamp. Early in the same year they made an 18-inch "sun spot." This was followed by a "rifle lamp."

With this Mole-Richardson equipment which was proven practical and a necessity with the panchromatic stock at that time, it was just a period of a few months until the entire industry changed over to the use of Mazda lighting.

The advent of sound made it an absolute necessity that Mazda lights be used, since then, there was an operating hum to the arc.

Mole-Richardson, being engineers and aware of the necessities of the studios with the change of conditions, which change seemed problematical at first, were in a desirable situation with a line of equipment.

Their lights could be seen in about every studio in 1928. They were adopted as the standard form of lights and came to be used almost exclusively by the entire industry.

(Turn to Page 26)

EVERY MONDAY—

as a special feature of

THE *Hollywood* REPORTER

all the news of all

OUTSTANDING
CAMERAMEN

is presented in

WHAT'S
WHAT

BRULATOUR BULLETIN

WHO'S
WHO

published in the spirit of

S E R V I C E



The different "art" in the making of the two illustrations which accompany this article lies in the fact that they were taken by means of the ordinary home window light, by space and "contrast" laws which Steadman has reduced to a studiable science, teachable to all art students in the schools. There is no thought of "super" art involved. The idea is that of correct or normal lightings which can be rendered in full agreeable tone gradations, ordinarily in the full scale from white to black, but within tone limits, without chalky whites or dead blacks. With these laws mastered, the students will be free to produce fine "lightings" of different types in the garden or grove as well as in their homes. It is indifferent whether they utilize this art in the production of photographic portraiture or paintings.

SCIENTISTS tell us that the behavior of the electron is comparable to the movement of a planet around its sun. This electronic storm never ceases. The character of that movement determines the nature of the atom which the electron inhabits, while the assembly of atoms which compose a molecule of matter, determines the sort of matter which is formed by the combination. For example: Two atoms of hydrogen and one of oxygen form a molecule of water, while two atoms of each form a molecule of hydrogen peroxide. The molecule is the "Structural Unit" of substances, or the smallest part of a substance which can exist separately.

The electronic storm, as an inherent property, determines the nature of the substance which it takes up. For example: It may contain the life germ, as did the wheat that lay for more than five thousand years in a tomb. Or it may be nutritious, as a food, or it may be the ash which remains undestroyed when a thing is burned.

It is the inherent molecular movement which gives all matter its characteristics. Compare tin with steel, glass with stone and lead with a diamond. This movement is augmented by heat and by light. When a metal is hot enough the molecules which naturally hold it together become so agitated, or move in space so far, each against its fellows, that the metal is disrupted and rendered liquid.

Lay a white card on a window sill in the sunlight and cast a shadow upon it with a finger or a pencil. In the sun-lit area the molecules are under a stress of increased motion against each other, as caused by the sun. In the shaded area this stress or movement is reduced. These conditions impart themselves to the rods and cones of the retina and we "see" the light and shadow.

If the paper were black instead of white and the solid angle of the sun's pencil of rays to each molecule were augmented with a powerful lens, the molecular

MOLECULAR ENERGY INHERENT AND INFLOWING

By F. MORRIS STEADMAN

friction which would be set up would disrupt the clinging molecules and set the paper on fire. The Boy Scout is taught how to set up this molecular friction by rubbing a dry stick in order to set it aflame when no matches are at hand.

Photographic films and papers are very sensitive to this molecular friction. In strong light they turn dark before the eyes. Films and plates take on this disrupting strain in a graduated degree, according to the intensity of the light in the different parts of an image which a lens casts upon them. The greater the disruption of the molecules in the film, the easier it is for the solution to penetrate it so that the chemical action can be carried on faster or slower in the different parts of an "exposed" film, thus forming the negative with its different densities.

It is the function of the "exposure" to create this molecular disruption with accuracy. We speak of a "correct exposure."

In former articles I have explained the use of these sensitive tinting mediums for measuring the brightness of ordinary surfaces. It will be well to repeat that, like the "independent" molecule of matter, each grain of these sensitive salts is an independent object and becomes brighter or darker, or warmer or cooler, according to the influx to it of the energy which surrounds it in space. For example: Suppose that it is desired to take the "tint time" of the light, say at sunset. This is the time required in that light for a "least visible tint" to be formed on the sensitive paper.

We could use for the purpose, a piece of the paper a foot square, or an inch square, or a piece just large enough to enable the discoloration to be distinguished. All would give the same result and paper would simply be wasted by using more than the smallest piece mentioned. This is because each grain of the sensitive salts tints independently, and only enough area is required to accommodate the vision, and not to satisfy any other physical or chemical law.

In the problem of illumination we must ask: "How is this molecule or this grain of sensitive salts illuminated?" It is as easy to think of an *illuminated* point as of an *illuminating* point. The former is nature's own act of illumination, while the latter is unknown in nature.

THE MADISON MART

Messrs. P. A. Lins, E. F. G. Herr and Wm. A. Kunze, formerly of the Herbert & Huesgen Company, have opened a store at 403 Madison Ave., New York, known as the Madison Mart. Here they will carry a full line of domestic and imported cameras, motion picture cameras and accessories, films, high grade toys, gifts and novelties. They have also a fully equipped laboratory for developing, printing and "art-proof" enlarging. They cordially invite our readers to visit their new store.

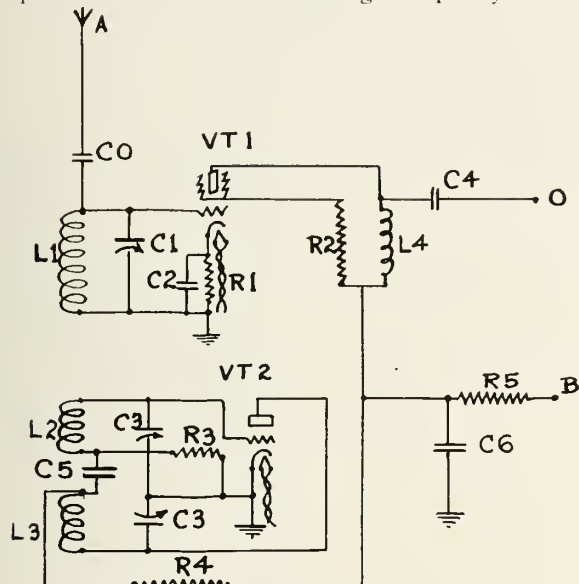
TELEVISION

AN ULTRA-HIGH FREQUENCY
TELEVISION RECEIVER UNIT

THE usefulness of the W6XS television receiver, described in the March 1934 issue of the *International Photographer*, is greatly enhanced by the ultra-high frequency adapter unit described herewith. The addition of this unit makes possible the reception of the Don Lee ultra-high frequency television

into a superheterodyne receiver. The first detector VT1 and the oscillator VT2, act to change the incoming ultra-high frequency signal to a frequency within the band of the W6XS receiver, by which latter receiver it is then amplified and received in the regular manner.

Besides the list of parts, A is the ultra-high frequency antenna, which should be a straight No. 14 wire eight feet long. It should be moved about in the receptionists' home until the strongest signal is received. The output of the unit appears at "O", which is to be connected to the antenna binding post of the W6XS receiver. The W6XS antenna is disconnected therefrom, and the tuning dial of the W6XS receiver set at a point where a station in the 1500 to 3000 kilocycle (W6XS) band is *not* received. If desired, "O" may be connected to the top of L2 of the W6XS diagram. B is connected to the junction of L5 & C13, and supplies plate voltage to the adapter from the main receiver supply, while the heaters of VT1 & VT2 are connected to the heater winding K of transformer T2 of the W6XS receiver. The converter unit should be thoroughly shielded. Coils L1 & L2 should be placed in line, and two inches apart, as this arrangement provides the coupling between tubes VT1 & VT2.



station W6XAO, on $6\frac{3}{4}$ meters, or other ultra-high frequency television or amateur station within a forty mile radius of the receptionists location, whether he be located in America, or abroad. With the unit disconnected, reception of the Don Lee television station W6XS, or police, aeronautical, and amateur stations in the band from 1500 to 3000 kilocycles, may be carried on as usual.

The accompanying unit converts the W6XS receiver

List of Parts for W6XAO Television Receiver
Superheterodyne Unit

- L1—4 turns No. 14 enameled wire on $\frac{1}{2}$ " dia. form.
- L2—4 turns No. 14 enameled wire on $\frac{1}{2}$ " dia. form.
- L3—4 turns No. 14 enameled wire on $\frac{1}{2}$ " dia. form.
- L4—Short wave radio frequency choke coil, $2\frac{1}{2}$ millihenries.
- C0—10 micromicrofarad condenser.
- C1—0.50 micromicrofarad variable condenser.
- C2 & C5—.01 microfarad condenser.
- C3—0.50 micromicrofarad split stator condenser (two sections 0.50 mmfd. each).
- C4—250 micromicrofarad fixed mica condenser.
- C6—.1 microfarad 400 volt paper condenser.
- R1—5,000 ohm carbon resistor.
- R2—250,000 ohm carbon resistor.
- R3—15,000 ohm carbon resistor.
- R4—25,000 ohm carbon resistor.
- VT1—RCA '24A, '57, or '58 vacuum tube.
- VT2—RCA '27, or '56 vacuum tube.

The new 48-speed Eyemo

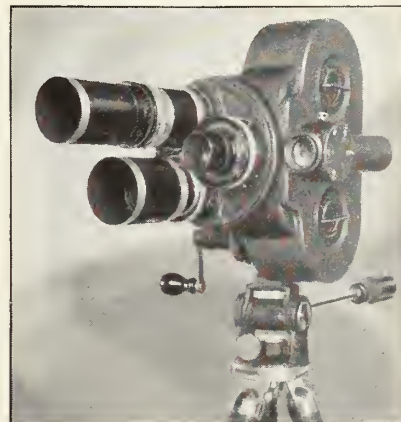
gives the highest speed available in a portable 35 mm. camera

The new 8- to 48-speed Eyemo 35 mm. hand camera, developed to permit taking pictures at twice sound speed, is now available on order.

This convenient, versatile camera has already proved its value to Martin Johnson, who is using it for filming big game from the air. It will be a boon to any cinematographer who has to produce semi-slow motion scenes under circumstances which make the use of a studio camera difficult or impossible. Its speed range, 8 to 48 frames per second, gives it general utility.

Known as Eyemo 71-CD, the new model has a three-lens turret head mounting the Cooke 47 mm. F 2.5 lens, standard equipment, and any two extra lenses selected from the Cooke line, ranging in focal length from 24 mm. to 20", and in speeds as fast as F 2. There is a hand crank for optional use, and a 12- or 110-volt electric motor may be employed. The governor gives accurate control of any desired speed, whether spring motor, hand crank, or electric motor supplies the power. Model 71-CD, like 71-C, may be adapted to use external 200- or 400-foot magazines.

Your present Eyemo 71-C can be converted to operate at 48-speed.



BELL & HOWELL

Bell & Howell Company, 1849 Larchmont Ave., Chicago; 11 West 42nd St., New York; 716 North La Brea Ave., Hollywood; 320 Regent St., London (B & H Co., Ltd.) Established 1907.

A Camera Without a
Cameraman Is Merely a
Triumph of Engineering
Skill. It Has No Soul.

THE CAM

Vol. I.

MONTHLY NEWS OF PRODUCTION

COLUMBIA By BOB TOBEY

"ONE NIGHT OF LOVE," directed by Victor Schertzinger. The old maestro Joe Walker as usual photographs Production No. 1 on Columbia's new schedule. If George Kelley were not his assistant there would be a millenium of some sort, so the result is that George Kelley is his assistant—we can't go around having millenia at this critical period. Vic Scheurich is the operative cameraman, Roy Babbitt his assistant, and Adolph (Whitey-to-you) Schaeffer is doing his customary artistic bulb-pushing. With Schertzinger directing, this ought really to be a railroad train picture—you get it, sch-sch, sch-sch, sch-sch. Heigh-ho! Walker has with him his inseparable (and most excellent) gaffer, George Hagar, and the mixer is a new one on the Columbia lot, Paul Neal. The set is full of melody, as it is the first vehicle for Columbia of that songbird, Grace Moore. Vic Schertzinger himself wrote some beautiful numbers for the picture.

"TWENTIETH CENTURY," directed by Howard Hawks. Joe August, the low-key enthusiast, is directing the photography on this one. I walked on the set the other day and thought nothing was on but the practicals, and lo and behold they were shooting a scene. The results are beautiful, however, and that is what counts. Dave Ragan is operative cameraman, and Marcel Grand and Jack Andersen are the assistants. Irving Lippman totes the snapshot equipment, Eddie Bernds is the mixer, and Jimmy Gaffer punts the lights—pardon my twirling, I mean Jimmy Ganter puffs the lights—oh, well, the guy's name is Jimmy Punter. Jack Barrymore, Carole Lombard, and the train whistle off the Twentieth Century Limited are starred in the picture, which I have on good authority is a humdinger—yes, so's the whistle. The boys are all looking forward for the next six productions to Jack Andersen giving imitations of John Barrymore.

"THE PARTY'S OVER," directed by Walter Lang. Benny Kline is Chief Cinematographer, with F. M. Browne doing the panhandling, and Fred Dawson and Jack Russell feverishly operating the focus-changing devices. Bill Fraker provides the 8-10 art work, Howard Grand is gaffing, George Cooper fiddles with the dials, and Walter Meins does the hard work, or in other words is gripping the picture.

In the cast are lovely Arlene Judge, Stuart Erwin, Chick Chandler, and Billy Bakewell. With this fun-loving cast the picture has been more play than work for the crew. But there's a shadow on the horizon. Brownie has just purchased a new Leica camera, and he complains that every time he wants to use it he finds Jack Russell off with it somewhere gaily snapping ream after ream of pictures. A love triangle with a new twist, it would seem. Fred Dawson and Russell are both very anxious for Brownie to buy some more lenses for it so they can try it out in bigger and better ways. Brownie contends that the old adage of loving one's neighbor as oneself has its moments of impracticability.

"MOST PRECIOUS THING IN LIFE," directed by Lambert Hillyer. John Stumar takes the bows on this, with Henry Freulich as his second, and Al Keller and Rod Tolmie assisting. Earl Crowley grabs the stills, Homer Planetett is gaffing, and dial-twisting is by Lambert Day.

The cast has Dick Cromwell, Jean Arthur, Don Cook and Anita Louise.

This picture sort of interrupted Freulich right in the middle of painting that yacht of his, but Henry says it's nice to keep working. He carries his paint brush right with him, however, in case he gets a day off. Tolmie is sporting a new Voightlander camera, and a continual clicking is being heard on the set these days. It's remarkable how these cameramen never tire. Postmen on a holiday—if they're not working at taking pictures they're playing at it. I can't see the idea myself—all I have is a 5x7, a graflex, a Roliflex, and an Expo Watch Camera. And let me tell you something about that Watch Camera—oh, well, skip it.

Andre Barlatier's work has been pretty quiet since his cross-country cruise in February—the same old round of inserts and process shots prevails. He did make a trip to Catalina for three days not long ago, to make background shots for that old master of background shots, Roy Davidson. Of course Andre took with him his inseparable

FOX

"THE WORLD MOVES ON." Producer, Winfield Sheehan; author of story and screenplay, Reginald Berkeley; director, John Ford; assistant director, Ed. O'Fearna; first cameraman, George Schneiderman; operative cameraman, P. Lockwood and J. Van Wormer; stills, Anthony Ugrin; sound engineer, Eugene Grossman; film editor, Paul Weatherwax.

Cast: Madeleine Carroll, Franchot Tone, Reginald Denny, Paul Roulien, Siegfried Rumann, Stephen Fetchit, Ferdinand Schumann-Heink, Brenda Fowler, Marcelle Corday.

"NOW I'LL TELL." Producer, Winfield Sheehan. Story by Mrs. Arnold Rothstein; screenplay by Edwin Burke; director, Edwin Burke; assistant director, Jack Boland; first cameraman, Ernest Palmer; second cameraman, Bud Mautino and Robert Mack; stills, Emmett Schoenbaum; sound engineer, Donald Flick.

Cast: Spencer Tracy, Alice Faye, Helen Twelvetrees, Hobart Cavanaugh, G. P. Huntley, Jr., Barbara Weeks, Robert Gleckler, Ray Cook, Frank Marlowe, Theodore Newton, Jr.

"CHANGE OF HEART." Producer, Winfield Sheehan; story by Kathleen Norris; screenplay by Sonya Levien and James Gleason; director, John Blystone; assistant director, Jasper Blystone; art direction, Jack Otterson; first cameraman, Hal Mohr; second cameraman, William Skall; assistant cameramen, Robert Surtees and M. B. Rugg; stills, Mack Elliott; sound engineer, Joseph Aiken; film cutter, Margaret Clancy.

Cast: Janet Gaynor, Charles Farrell, James Dunn, Ginger Rogers, Beryl Mercer, Gustav von Seyffertitz, Irene Franklin, Fiske O'Hara, Jane Darwell, Nella Walker, Drue Leyton, Kenneth Thomson, Mary Carr, Barbara Barondess.

"MERRY ANDREW." Producer, Sol M. Wurtzel. Based on the play by Lewis Beach; adaptation, Kuthee Glasmon; screenplay by Wm. Conselman and Henry Johnson; director, David Butler; assistant director, Ad Schaumer; musical director, Samuel Kaylin; first cameraman, Arthur Miller; assistant cameramen, L. B. Abbott and Alfred Lebovitz; stills, Cliff Maupin; sound engineer, E. C. Ward; film editor, Irene Morra.

Cast: Will Rogers, Peggy Wood, Mary Carlisle, Paul Harvey, Frank Melton, Roger Imhof, Robert Taylor, Grace Goodall, Jessie Pringle.

"SPRINGTIME FOR HENRY." Producer, Jesse L. Lasky. Based on the play by Benn W. Levy; adaptation by Keene Thompson and Frank Tuttle; director, Frank Tuttle; assistant director, George Blair; first cameraman, John Seitz; assistant cameramen, Jack Epstein and Harry Webb; stills, Bill Thomas; sound engineer, A. Bruzlin.

Cast: Otto Kruger, Nancy Carroll, Heather Angel, Nigel Bruce, Herbert Mundin, Arthur Hoyt.

"CALL IT LUCK." Producer, John Stone; original story by Dudley Nichols and George Marshall; adaptation by Joseph Cunningham and Harry McCoy; screenplay by Dudley Nichols and Lamar Trotti; director, James Tinling; assistant director, Percy Ikerd; first cameraman, Joseph Valentine; assistant cameraman, Warner Cruze and Harry Dawe; stills, Frank Powolny; sound engineer, A. W. Protzman; film editor, Alex Troffey.

Cast: Herbert Mundin, Pat Patterson, Charles Starrett, Georgia Caine, Gordon Westcott, Theodore von Eltz, Ernest Wood, Ray Mayer, Susan Fleming.

able companion and assistant, Enzo Martinelli.

I've been doing all right myself the last month or so. Been practically commuting between Los Angeles, Palm Springs, and Agua Caliente. And while I'm on the subject, folks, here's a marvelous example of the pathetic plight in which a cameraman often finds himself. The last time I was at Caliente, I was there for the purpose of catching shots of a few celebs for that Screen Snapshots newsreel I photograph for Columbia. Of course I placed a bet or two on the side, but that's neither here nor there—or rather, it was there, not here. Anyhow, along came the Handicap, the big race of the year. Along it came, and so did those ponies—tearing up the track in the most exciting race of the season—for the favorite was running fourth. And just at that moment I spotted Bing Crosby, of whom I had been trying to get a shot all day, so I turned on my camera and ground away while the race thundered to a finish behind me. What a plight! If Bing reads this I hope he can't sleep nights for contributing to my delinquency. Or something.

CARTOON



Suggested by Roy McCall's

MISCELLANEOUS

Fred Jackman, accompanied by his son, left March 19 on the Tatsuta Maru bound for the Orient. He will obtain backgrounds for the Warner production, "Oil for the Lamps of the East," which will permit the making of the picture at the Burbank studios. In addition to obtaining these shots, Jackman will photograph exterior backgrounds in other parts of the Orient as the picture continues his tour around the world. Fred Haskins will be in charge of the Warner effects and special effects department during Jackman's absence.

Max Stengler is back at M-G-M after completing an assignment in Florida.

Lyman Broening has returned to Hollywood after a visit with his father and mother at his old home in Baltimore. He stopped at Washington, D.C., and New York, arriving in New York just in time for the biggest and best blizzard they ever had there.

George (John of Gaunt) Lancaster has returned from Nevada with a modern version of the "Towns."

TRAGRAM

Because of Cameramen
Oncoming Generations Will
Possess the World's First
Dependable Historical
Records.

FROM THE CAMERAMAN'S ANGLE

No. 4

COURTESY



og: "The World Do Movie."

REUS

over, Paramount cameraman, up and did
The bride is Mary Kornman, formerly of
ing" comedies and adopted daughter of our
Gene Kornman. Best wishes, Mr. and
Ter.

Calori, former member of 659, and now
1th Signal Company, stationed at Hono-
still man of that station and is ambitious
re a member of the International Photo-
again. Emilio wants to get in touch with
rchorr, Louis De Angeles and Ben Rey-

me A. (Red) Grant, assistant, stopped in the
y to display a new coat of tan, plus a
frisks, acquired at Catalina Island, where
ment has been shooting "We're Not Dress-

ie Baker, inventor, special process wizard
all-round motion picture camera miracle man,
st about to spring a new one (not a camera)
ne unsuspecting public. Watch these columns
his announcement.

UNIVERSAL

"LITTLE MAN, WHAT NOW?" Producer
and director, Frank Borzage; play by Hans Fal-
lada; screen play by Wm. Anthony McGuire; first
cameraman, Norbert Brodine; stills, Junius Estep.
Cast: Margaret Sullivan, Douglass Montgomery,
Alan Hale, Mae Marsh, Fred Kohler.

"ALIAS THE DEACON." Associate produc-
er, Edmund Grainger; play by Leroy Clemens and
John B. Hymer; screen play by Earl Snell and
Clarence Marks; director, Kurt Neumann; first
cameraman, George Robinson; stills, Fred Levi.

"AFFAIRS OF A GENTLEMAN." First cam-
eraman, John Mescal; stills, Harry Osborn.

"THE HUMBUG." Associate producer, E. M.
Asher; play, screen play and direction, Max Mar-
cin; first cameraman, Gilbert Warrenton; stills,
David Farrell.

Cast: Nils Asther, Gloria Stuart, Erin O'Brien-
Moore.

ASSISTANTS OFFICIALLY RECOGNIZED

(E. O. Blackburn in *Brulatur Bulletin*)

One of the most unexpected, but most pleasing
features of the Academy Awards Banquet was rec-
ognition of six assistant directors. One from each
studio of major importance received a scroll of
honor.

When Will Rogers made his snappy little speech
to Charles Lang, he pulled a reply from the win-
ning photographer which was right in line with
the above.

In a few well chosen (and very sincere) words,
Lang gave credit to his crew and the Paramount
lab.

We can't even hope (as yet) to have the Acad-
emy recognize the assistant cameramen—but un-
officially there's no rule or reason to deny us that
right.

Therefore, we are today presenting to Bob Pit-
tack (Lang's operative cameraman on "Farewell
to Arms") and to Cliff Shirsper (Lang's assistant)
the *Brulatur Bulletin* Trophies for the winning
camera crew. This will be permanent practice in
years to come. To Mr. Lang we extend our heart-
iest congratulations.

UNITED ARTISTS

"THE LOST GENTLEMAN." Associate Pro-
ducers, William Goetz and Raymond Griffith;
author, Katherine Clugston; screenplay by Leonard
Praskins; director, Sidney Lanfreed; assistant,
Ben Silvey; first cameraman, Barney McGill; sec-
ond cameraman, Kenny Green; assistant, Bill
Whitley; stills, Clarence Hewitt; film editor, Mau-
rice Might; art director, Richard Day; chief elec-
trician, Bobby Comer; chief grip, Charles Rose;
chief prop, Martin Hershey.

Cast: George Arliss, Janet Beecher, Edna May
Oliver, Ralph Morgan.

R-K-O

"STINGAREE." Associate producer, David
Lewis; original story by E. W. Hornung; screen
play by Becky Gardiner; director, William Well-
man; first cameraman, James Van Trees.

Cast: Richard Dix, Irene Dunn, Mary Boland,
Conway Tearle, Snub Pollard, etc.

"OF HUMAN BONDAGE." Associate pro-
ducer, Pandro S. Berman; original story by W.
Somerset Maugham; screenplay by Lester Cohen;
director, John Cromwell; first cameraman, Henry
Gerrard.

Cast: Leslie Howard, Bette Davis, Reginald
Denny, Alan Hale, Reginald Sheffield.

THE ACADEMY AWARDS

The winner of the annual cinematographic
award for 1933, by the Academy of Motion Pic-
ture Arts and Sciences, as announced at the an-
nual banquet, March 16, 1934, is Charles Lang,
photographer of "Farewell to Arms" (Paramount).
George Folsey, Jr., and Karl Struss received,
respectively, second and third mention.

ANOTHER HONOR FOR H. T. COWLING

Secretary of the Interior Ickes announces the
appointment of our good friend, Herford Tynes
Cowling, as advisor to the Roosevelt Adminis-
tration on Motion Picture Production. A produc-
tion program to cover photography of all the new
public works of the administration will be out-
lined at once with Mr. Cowling in charge, the
first activity being the installation of a labora-
tory. Mr. Cowling will also have full charge of
the selection and distribution of all films to be
provided for the entertainment and instruction
of all the 460 C.C.C. camps. Later he says he
will have need of several cameramen. Of Mr.
Cowling "Who's Who" says in part:

Motion Picture Engineer; explorer, born Nanse-
mond County, August 20, 1890. Son of John
Phillips and Caroline Weaver (Tynes).

C.; Geo. Wash. U., 1912-13; married Virginia
Hardin of Norfolk, Va., Jan. 14, 1927. Chief
photographer U. S. Reclamation Service 1910-
1917. Traveled extensively U. S., Canada, Mexi-
co 1913-16. Headed cinematographic expdn. 1917
to Formosa, Phil. Is., Indo China, Siam, Dutch
East Indies, Australia, Tasmania, China, Japan,
New Zealand and South Sea Islands producing
semi educational and travel pictures; chief cine-
matographer and tech. dir. for Paramount—Bur-
ton Holmes Travel Films; tech. dir. Teaching
Films Dept., Eastman Kodak Co. since 1927.
Made pictures of Europe in the remaking 1919,
including France, Belgium, Germany, Austria,
Switzerland, Ceecho Slovakia, Italy, also Algeria,
Tunisia, Tangier, Morocco, Sicily, Spain, Egypt,
Palestine, Constantinople, expd. to British East
Africa filming big game hunting 1922—India,
Kashmir, Tibet, 1923-24 (round world tour); Chi-
na War Correspondent Sept.-Nov., 1924; made
first moving picture in Tibet of its people and
customs; made motion picture of coronation of
Maharaja of Kashmir for Kashmir Government,
1925. Capt. Spl. R. C.

Mem. Federal Photog. Soc. (pres. 1915-16),
Amer. Soc. Cinematographers, Soc. Motion Pic-
ture Engrs. (mem. Bd. Gov.) S.A.R., fellow
Royal Photog. Soc., Great Brit. Awarded gold
medal for photography S. Frisco Expn., 1915.
Mason (K. T., Shriner). Methodist.

Clubs: Explorer, N. Y., Adventures, Chicago.
Address: 33 Culver Rd., Rochester, N. Y.

MASCOT

Alvin Wyckoff, who was recently mauled, while
photographing scenes for "The Lost Jungle," has
recovered and is again able to get behind the
camera. This picture was shot at Mack Sennett
Studios and at Peru, Indiana, the winter home of
the famous Hagenbeck-Wallace Shows. The pro-
ducer is Mascot Pictures Corporation, under super-
vision of Nat Levine, president. The picture is
in serial form, twelve two-reel episodes and the
story is fabricated from legendary lore drawn
from the lost continents of Lemuria and Atlantis.
Clyde Beatty, famous animal trainer, directed the
work of the quadrupeds in the picture and suffered
a few buffetings along with Mr. Wyckoff. The
lion wrecked the camera, but no life was lost.

The camera crew, beside Mr. Wyckoff, included
Ernest Miller and William Nobles, first camera-
men, and William Jolley, Monty Steadman and
Jimmie Higgins, assistants. Stills were shot by
Paul Ries.

"MYSTERY SQUADRON." Producer, Nat Le-
vine. Original and screenplay by Sherman Lowe
and Al Martin. First cameraman, Alvin Wyckoff,
Ernest Miller and William Nobles; assistants,
William Jolley, Monty Steadman and Jimmie
Higgins; stills, Paul Ries.

MONOGRAM

"NUMBERS OF MONTE CARLO." Super-
visor, Paul Malvern; author, E. Phillips Oppen-
heim; screenplay by Norman Houston; director,
William Night; assistant director, Mack Wright;
first cameraman, Archie Stout; second camera-
man, Reggie Lanning; assistant, Russ Harlan;
stills, Joe Walters; recording engineer, John
Stransky, Jr.; film editor, Carl Pierson; art direc-
tor, E. R. Hickson; chief electrician, Edwin L.
Cox; chief grip, Tex Hayes; chief prop, Arden
Cripes.

Cast: Mary Brian, John Darrow, Kate Camp-
bell, Yola D'Avril, Robert Frazer, Astrid Allyn.

WHY AMERICAN PICTURES LEAD IN BRITAIN

By ALFRED C. MOORE, *Journalist*

[In the February "International Photographer" Alfred C. Moore described some of the reasons which account for the popularity of American motion pictures in the United Kingdom. In this second article he explains some social considerations which tend to favor the appeal of American pictures to British movie patrons.—Editor's Note.]

IT is a proud boast in England among clergymen of the Establishment, doctors, lawyers, active and retired officers of the Services and the rest of the upper middle class that the Battle of Waterloo was won on the playing fields of Eton College, Windsor—which in this instance is symbolical of the playing fields of the "public" schools throughout the kingdom.

So that this statement may be properly understood by Americans, it must be explained that in England a "public" school is a more or less exclusive kind of private school. This contradiction in terms has its origin back in a past century and, since it is not material to this article, we will let it pass.

The upper middle class forms, numerically, but a small proportion of the population of the British Isles. Stodgy tradition is dear to their hearts. Most of them believe that Britannia still rules the waves and that the United States is a lost colony.

These people are untouched by the vulgar virility of the New World. Everything American and anything savouring of Americanism is "not quite nice"—even barbaric and repulsive. They rarely enter a motion picture theatre, and, when they do, they choose one of those pale blue British-made picturized stage plays in which the actors and actresses (yes, actors and actresses) pronounce last year "lahst ye-ah" and do that as if it hurt them.

A few of the upper middle class who are not so upper might condescend to view a "Dinner at Eight" or a "Guardman" and criticize it afterwards. They would probably have Mae West listed in their precinct as Public Enemy Number One, and there's only one way you'd get them into a "cinema" where her pictures are billed; you'd have to chloroform them!

At the top of the social ladder, up above the heads of the upper middle class, is the blue-blooded aristocracy and nobility—cultured, travelled people who live in a rarefied atmosphere of feudal castles, baronial halls and manor houses. Many a scion of these elect probably goes for Miss West in as big a way as the American college boy does, but he wouldn't tell his ma!

Way down far below the social registerites and the middle classites live "the people", numbering more than three-fourths of Britain's population. These millions who work in factories, mines, shops, offices and on the land form the great motion picture going public of these Islands. They know life in all its stark reality. They have to. To them, Mayfair and manor houses are just names—places inhabited by beings alien to them in speech, thought and social habits.

As yet but incoherently expressed, the ideals of true social democracy are shaping in their minds. Today, many of them hear in the painfully-pronounced broad "a" a challenge to the achievement of these ideals.

When they seek brief respite from the dreary monotony of their drab existence, where do we find large numbers of them? Lining up outside motion picture theatres paying their sixpences or their shillings at the box office to live a couple of hours with real folks who graphically portray, for their distraction, the primitive emotions of

mankind—love, hate, joy, sorrow, jealousy, friendship, greed, generosity, fear and courage; who speak with an accent and intonation foreign to the watching hearers in the darkened auditorium, but far less foreign—far more real in human appeal—than the throaty, affected accent of Oxford University and Mayfair. In short, "regular" people—the kind, the watchers feel, that would not high hat them if they could step out of the screen into the auditorium.

It matters not that the action takes place somewhere between the North Atlantic and the North Pacific, because that is merely incidental to the story. It matters not that the scrap between the boys trying to bum their way East takes place on a freight train rolling across the plains of Nevada, because the boys are in imminent peril of being knocked out of the car on to the track and killed.

And the watchers in Nottingham, Newcastle and Glasgow are very anxious that nothing so dreadful will happen because they have seen the youngsters in their homes in a West Coast town; have seen how the honest father of one of them was laid off at the cement works due to the depression; how the kid, not wishing to be a burden on his family, courageously leaves the distressed home to find work some place else. And the audience in Nottingham and Newcastle and Glasgow knows just how bad you feel when you are up against stark realities like that.

The audience is not deeply perturbed by the misfortunes of Sir Cyril Hawleigh's son, who is compelled to resign his membership of the Blankshire Hunt on account of the old man having lost the last chunk of his inherited fortune in the terrible Consolidated Tea stock debacle. Nor are the watchers distressed when the youth has to take a humble position on a bank clerk's stool because they are figuring it was time he got down to a job of work anyway.

Moreover, they subconsciously resent the suggestion of overwhelming superiority in the youth's accent and manner when he patronizingly jokes with the doorman, because lots of them are doormen, or were, or will be, or are connected with somebody who is. And when the broke baronet's son goes off on his annual vacation with the bank manager's daughter and philanders about with her on the snows of St. Moritz, they find it just about as thrilling as a harp recital. But you can't expect British movie makers to know that because they think in terms of the upper middle class, and they are convinced that it would be sheer heresy to think any other way.

No sir! British studios apparently don't know it, but the Battle of Motion Pictures, so far, has been lost on the playing fields of Eton.

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CINEMATOGRAPHER'S BOOK of TABLES

THE NEWSREEL WORLD

Newsreels and Composition

THESE pages have carried many subjects that pertained to our newsreels and the men who make them. Now we are adding a new subject that should be considered by every newsman who wishes to advance composition.

Having studied under some of the world's foremost painters and camera artists I now feel that I have gained enough knowledge to enable me to aid my readers.

If in this first article on this subject I can interest you just enough to *think* composition the effort has been worth it.

All too often a news scene merely is a record of an event or subject. Especially is this true in regard to close-ups of people talking. All newsmen center the person in the middle of the picture and that is the composition (if the finder is not off).

Why must every soul facing a camera be in the center? If, for example, our perfect President speaks, and he faces left in so doing, better composition is obtained by leaving greater space **IN THE AREA HE IS FACING**. Should the speaker be seated splendid composition can be gotten by following the flowing lines leading from shoulder to feet by allowing more room for these lines in the direction they take.

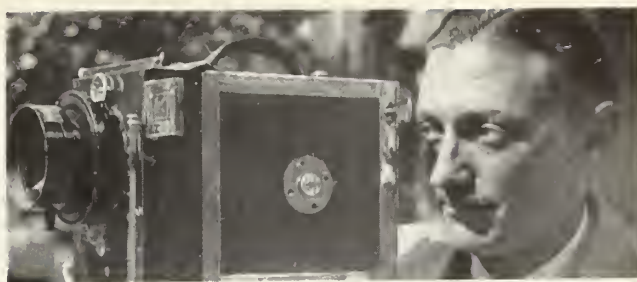
That is, if the head is in the right hand area of our screen these lines flow left to the floor. Using lights more in the manner outlined in our last article you will approach studio quality in your news efforts. These little tips take no more time and are worth the thought. Study such paintings as Whistler's "Mother" and you will get the idea.

Once I covered Niagara Falls in winter garb. By giving great thought and study to composition I not only received praise, but extra money for the time and effort involved, so you see, it pays.

The next time you are covering a major disaster, think of composition. Visit your local art galleries where you will find many examples of how great artists accentuate stark tragedy and the drama of such events. Take for example a scene of devastation caused by a train wreck, flood, earthquake, fire or storm. We see a lot of fast blurry pans that are worse than those amateurs make. How much better a scene with a wide angle lens adding a thought to composition.

Put a poor woman on a chair in the lower left hand corner surrounded by her children and the wreck of her home and fill the rest of the screen with the long shot of the widespread damage. If possible give the entire scene a somber touch with a 23A red filter allowing no extra exposure for its use. This will give almost a night effect, a scene that should add an artistic touch to what would otherwise be just a news shot.

Bear in mind, that the eye naturally starts from the lower left hand corner of your picture and travels up to the upper right hand corner. Place your primary subject somewhere to the right of the center of this line and the secondary to the left of it. This simple rule used in this manner, or reversed, will aid you in using better artistic judgment, and is known as dynamic symmetry.



Now let us look at the bathing beauties and fashion stories. We see pretty girls posing before our camera violating every rule of grace, line, curve and symmetry. To anyone with half an eye for beauty the picture is always lacking in something.

You may have the palm trees, the setting right, but your girls always look angular. The secret of posing women in standing position was taught me by Mr. Lewis M. Physioc, an artist if ever there was one. He explains that the girls always flex the knee nearest the camera instead of hiding the flex behind the front leg, giving flowing lines to your subject instead of angular. The more nearly a girl forms a flowing elongated figure "S" the more beautiful her figure becomes. This simple thought impressed on your minds should help us to bear up under the strain of a long line of such stereotype stories.

In closing, let me thank you all for your kind letters and believe me, I'll answer them all as soon as time permits.

RAY FERNSTROM.

SWEDEN SHOWS 'EM

A method of recording sound for use of motion picture companies on location, which makes use of regular radio network facilities was put into operation on January 22 at Uppsala, Sweden.

This method, which was developed by Brill, an engineer in the Swedish film industry, does away with the need of sound trucks or other portable recording equipment. Considerable savings are expected to be made.

Although regular radio equipment is used the sound does not go out over the air but is carried over commercial wires direct to the studio at Rosunda, near Stockholm, where the actual recording is done.

FRED WESTERBERG

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MOTION PICTURE SOUND RECORDING

In the previous chapters on monitoring, the general practice of the art was discussed in rather concise form. This final chapter on that subject now brings in some practical aspects of monitoring and explains the change in technique necessary for scoring music.

Three-ply veneer is now almost universally used for the walls of motion picture sets. If this thin material is not strongly supported and broken into small panels by thick bracing strips, the resonant frequency of the panels may fall within the range of frequencies that are recorded. Then a loud sound having the same frequency as the resonant frequency of the panels would set them into sympathetic vibration, greatly intensifying the sound and causing distorted sound quality to be recorded. If the monitor man is compelled to work in a set where such a condition exists, his only resort is to keep the microphone at a distance from these "drummy" panels and facing away from them.

Acoustic Aids

Folding baffles made of quilts of sound-absorbing material, such as rock wool, fastened to a suitable framework, are sometimes necessary to reduce the amount of reverberation in a set by adding additional damping. They must be tried at different points until the required effect is obtained, being careful, naturally, that they are out of range of the camera lens. In a similar manner, baffles of hard wood are sometimes used to increase the reverberation in a set that is acoustically "dead." Soft padding, such as Ozite, is usually placed on bare floors to muffle the footfalls of the actors, where such padding will not be in the picture.

The monitor man must be alert at all times that extraneous noises, such as the sound of camera gears ("camera noise"), the alternating-current hum from adjacent electric lines, or the scrape of a cable on the floor during moving shots, do not exist in the sound records he approves. He must watch, too, that he fades in or out with his mixer dials when the cameraman makes a fade in or fade out with the camera. Likewise, if a sound is originating in another room of the set, and the door between that room and the microphone is closed by an actor during a take, the monitor man must turn down the mixer control so that the sound decreases proportionately in volume. Since the rooms are all open on two sides, the actual decrease in sound would hardly be noticeable.

Making Orchestrations

The scoring of music requires a different technique in monitoring and in placing the microphones than is required for dialogue recording. Scoring is probably the most delicate task the monitor man has to perform, and the one that calls for the greatest natural ability. Just as one microphone has been found to be most satisfactory for recording dialogue, experience has taught monitor men that better recording will result from the use of three microphones for orchestrations. However, as in the case of dialogue recording, there are a few monitor men who still prefer a single microphone for scoring music.

The usual practice in making an orchestration is to arrange the orchestra much as if it were on a theatre stage, with the three microphones located where the audience ordinarily would be seated. To emphasize acoustically the stage effect, a backing of hard walls is usually

Chapter VIII

By

CHARLES FELSTEAD

Associate Editor



placed behind the orchestra. A heavy rug laid beneath the microphone and a cloth curtain hung behind it, serve to provide the damping normally afforded by the audience.

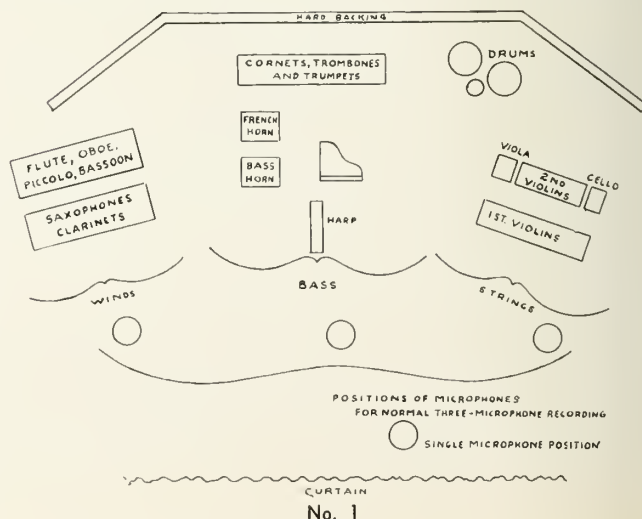
Arranging the Orchestra

One form of orchestral arrangement for the scoring of music is illustrated in Figure 1. The same disposition of the instruments is satisfactory whether one, two or three microphones are used for recording. Every monitor man who does orchestrations has his own individual method of seating the musicians; so the arrangement shown here is given simply as an example of one method. Hard and soft baffles of the screen type are often set up along the edges of the orchestra as an aid in securing the proper effect. The arrangements of the instruments of jazz orchestras and brass bands are somewhat different from that shown.

The orchestra is roughly divided into three main groups: the wood-winds and brass-winds, the bass instruments and stringed instruments of the violin type. These groups are arranged on the scoring stage as shown, with the harp and piano placed among the bass instruments. The drums and traps are located at the back beside the cornets because of the intensity of sound produced by these instruments. The three microphones are placed so that there is one in front of each group of instruments. If a single microphone is used, it is placed back farther from the orchestra and to one side of the center so that it favors the stringed instruments, as shown in the illustration. The arrangement for two microphones is a compromise between the microphone settings shown, and the orchestra is divided more nearly into two groups.

Individuality Necessary

After the initial set-up has been made, it is advisable for the monitor man to listen to the resulting effect and



then make any minor changes in the arrangement necessary to provide the most satisfactory musical balance, because the exact distribution of the instruments depends largely on the playing of the individual musicians and on the musical director. Once the positions of the musicians and the microphones have been adjusted to the proper

sound system, the lower the ground noise level; although there is a certain point beyond which it is physically impossible to advance.

Overloading Causes Distortion

The overload point is defined as the point at which the recording device (the light valve in the Western Elec-



Courtesy Universal

Mike set up location shooting Olympic Stadium. Monitor man and directors discussing coming shot.



Courtesy Paramount

Photo shows the wall construction that causes much trouble with vibration and emphasis of certain frequencies.

relationship and the hard and soft screens have been set in place there is no need for changes during the recording.

The arranging of the orchestra and the locating of the microphone are much more critical when a single microphone is employed; but some monitor men claim that it is worth the extra effort because the recording obtained seems more "unified". That assumption, however, is debatable. The author personally prefers three microphones for scoring music and one microphone for recording dialogue.

Regulating the Recording Level

Control of the recorded music is provided by the three mixer controls associated with the three microphones. If the brass-winds predominate and the stringed instruments can barely be heard in the monitor horns, the output of the microphone before the brass-winds is turned down and the output of the microphone before the stringed instruments is raised until a harmonious blend of the various instruments has been obtained. The overall volume supplied to the recording system during scoring is regulated by the main volume control, the mixer controls being left set.

Volume Range of Recording Systems

Whether recording music or dialogue, the monitor man has another important thing to watch besides the placing of the microphone: he must not permit the volume of the recorded sound to vary beyond the electrical limits of the recording system. These limits of the recording system are defined by the ground noise level at the lower end of the recording range and by the overload point at the upper end of the range.

Ground noise is inherent in every sound recording or reproducing system. It is produced by such tiny extraneous noises as the breathing of the persons on the sound stage, the faint rush of the ventilator system, and noises in the microphone. The hiss of tubes in the amplifiers, noisy resistors, electrical leakage, and battery noise all add their minute quota to the ground noise.

Allowance must be made for the additional ground noise that is introduced by noises in the reproducing system when the sound record is reproduced—such as the noise generated in the pick-up unit by dirt on the film sound track or roughness in the wax record ("needle scratch"), and sound in the theatre produced by the shuffle of feet and the coughing of the audience. The better the

tronic system) or the recording amplifiers overload and cause harmonics and distortion to be present in the sound record. The recording system will handle an electric current of just such a maximal value, and when that value is exceeded the system is overloaded, just as a tank will hold just so much water without overflowing and no more.

If the monitor man attempts to record a sound that is below the ground noise level, such as a low whisper, the ground noise—both in the recording and reproducing systems—will completely obliterate it and make it impossible to distinguish the sound when it is reproduced. If the intensity of a sound is too great to be recorded—a gunshot for example—and the monitor man does not turn his mixer controls down far enough to cause a sufficient reduction in its intensity, the sound will be recorded at such a high level that it will cause the light valve to clash or exceed the carrying capacity of the amplifiers.

Ideal Sensitivity Range

The maximum intensity range of the normal human ear under ideal conditions in the open is approximately 130 decibels (a term which will be explained in a later chapter) at a frequency of 1024 double vibrations per second. This value may be checked by the reader by referring to the composite acoustic chart printed with Chapter III in the November issue, remembering that sensation units correspond to decibels. Incidentally, the greatest range of sensitivity of the human ear is at this frequency, decreasing with higher or lower frequencies.

A high-grade recording system operated under ideal conditions in the laboratory as a sensitivity range of approximately sixty decibels; although under actual studio operating conditions its range is considerably less, due chiefly to the amount of extraneous noise always present in a sound stage during production. The seriousness of this discrepancy, however, in the sound volume ranges of the present recording systems and the human ear is not as great as might at first seem.

Natural Limitations of Range

The ground noise that is inherent in both the recording and reproducing systems and the continual crowd noise that forms a faint under-current of sound in a theatre combine to raise the level of minimal audibility required of a sound system to a point about thirty decibels above the absolute minimal value given for the human

(Turn to Page 28)

MINIATURE CAMERA PHOTOGRAPHY



EXPOSURE and Fine Grain: Exposure is a prime factor in determining the resulting grain in the negative. It seems peculiar that of all the phases of photography which the amateur can choose to use as a measure of his experience, exposure is the one usually selected. Many photographers usually pride themselves upon their ability to guess correct exposures, and despite the fact that reducing and intensifying solutions have to be resorted to frequently, their faith in their exposure-guessing ability remains unshaken.

One of the beauties of the miniature camera is its exact precision, and this typifies the manner in which



Candid photo: Max Baer, Walter Huston and Jack Dempsey, at the premiere of "Dinner at Eight". Taken by Joe Meyer with a Leica camera and Hektor f:1.9 lens.

it should be handled to produce gratifying results. It may be practical for a man using 5x7 inch plates to rely upon the latitude of the emulsion, and approximate at the correct exposure, subsequently resorting to reducing and intensifying solutions if necessary. Miniature camera photography, however, really is a graduate form of photography in which exactness is the code for success. The owner of the small camera cannot afford to adopt such slipshod methods.

The exposure should be full, but over-exposure must be avoided. When an overexposed negative is developed the rate of development proceeds at a rapid pace. The individual particles of silver readily break through their gelatin coating to form clumps of silver. Density will be built up at a fast rate, and in the resulting negative will be quite high. It has been definitely proven, that if a print of constant density is made from negatives of increasing density, the graininess of the print increases as the density of the negatives increases.

Under-exposure on the other hand, though favoring fine grain, produces unsatisfactory results. It is obvious that if the happy medium of correct exposure is to be attained the aid of some mechanical device must be solicited. This is a simple matter for there are many reliable exposure meters available.

Before considering exposure meters let me mention

By

AUGUSTUS
WOLFMAN



a relatively inexpensive little device which is quite accurate—the Burrough Wellcome Exposure Calculator. This contains a list of tables denoting by figures the actinic strength of daylight during the different months of the year, and the time of day. Another table uses figures to indicate the relative speed of the film being used. By turning a celluloid disc so that both figures are together, a series of exposures are seen together with the corresponding diaphragm openings. Provision is also made for special subjects, such as beach scenes, clouds, etc.

In general, exposure may be divided into two types, extinction or optical meters, and electric meters. In the extinction type the basis upon which the correct exposure is determined is taken upon a figure or other character which is just barely visible in the instrument. Reliable meters of this type include the Drem Meter, the Leicascope, Bewi, Practos, Gracophot, Tele-Bewi, etc. The Gracophot and Tele-Bewi are also distance meters. In the Gracophot a knob is pulled up and the object is seen upon a ground glass. A knurled ring at the end of the meter is then turned until the object is in sharp focus. The correct distance is then read from a scale on the meter.

The Tele-Bewi has a distance meter of the military type attached to the exposure meter.

Electric meters such as the Weston and Electrophot incorporate photoelectric cells which convert the light energy striking them into electricity, which in turn operates the needle of the dial denoting the strength of the light.

The Bell & Howell Photometer, also an electric meter, works on a different principle. This contains a small battery and bulb. A dial is turned until the brilliance of the lighted filament matches that of the subject. The correct exposure is then read from scales on the meter.

The exposure to use varies according to the speed of the film employed, so that meters have a provision whereby the speed of the film will play a part in determining the correct exposure. Two systems are used to denote the speed of an emulsion, H. & D. numbers and Scheiner degrees. Most meters employ Scheiner degrees. It is difficult to compare these two speed figures for both are determined in a different manner. It is possible to have a number of emulsions which have the same H. & D. number, and still exhibit widely different Scheiner degrees, and vice versa. Another factor which is quite disappointing is the fact that there is no standard method of determining film speeds. H. & D. numbers determined by one manufacturer will be different from that obtained by another. The same holds true with Scheiner degrees.

The results obtained in determining the speed of an emulsion is dependent upon such factors as the color of the exposing light, the manner in which the exposure

is made, development, etc. There is no uniformity in this matter, each laboratory employing its own method.

There is, however, an aid which compensates for all these inaccuracies, and that is the latitude of the emulsion. Every emulsion can stand a definite amount of deviation from the correct exposure, either under, or over, and still produce a correctly exposed negative. Panchromatic films seem to have wider latitudes than orthochromatic emulsions.

H. & D. numbers for a film may be available and the meter employed utilizes Scheiner degrees or vice versa. For convenience I am listing below two tables, the first containing various films and their speeds in Scheiner degrees, and the second a comparison between Scheiner degrees and H. & D. numbers:

Table of Film Speeds

	Daylight	Mazda
Agfa Fine-Grain Plenachrome -	21	.....
Agfa Superpan - - - - -	23	25
DuPont Orthochromatic - - -	17	.....
DuPont Panchromatic - - -	18	20
DuPont Superior - - - - -	24	27
DuPont Special Panchromatic -	23	25
DuPont Micropan - - - - -	16	18
Eastman Kodak Orthochromatic	17	.....
Eastman Panatomic - - - -	19	22
Eastman Kodak Panchromatic -	17	21
Eastman Kodak Type 2 - - -	18	22
Eastman Kodak Supersensitive		
Panchromatic - - - - -	23	26
Eastman Kodak Verichrome - -	19	.....
Gavaert Superchrome Express -	21	.....
Savaert Superchrome Express -	21	.....
Mimosa Extrema - - - - -	21	.....
Perutz Orthochromatic - - -	17	.....
Perutz Persenso - - - - -	21	.....
Selo Orthochromatic - - - -	19	.....
Selo Panchromatic - - - - -	21	23
Voigtländer - - - - -	23	.....

Scheiner Degrees and H. & D. Numbers

Scheiner No.	H. & D. No.
10	56
11	72
12	91
13	117
14	150
15	190
16	240
17	308
18	390
19	500

20	636
21	800
22	1,050
23	1,300
24	1,700
25	2,100
26	2,700
27	3,500
28	4,400
29	5,600
30	7,200
31	9,100
32	11,600

Despite the accuracy of exposure meters there is still a factor left to personal judgment—the color of the light. In the above table of emulsion speed provision is made for the speed of panchromatic films to mazda light. Daylight, however, varies in its chromatic characteristics. During noon it is what we may term normal. In the early morning or late afternoon it usually exhibits large quantities of red and yellow. Exposure meters measure the actinic strength of light in relation to its quantity, and not as to its color. A panchromatic and an orthochromatic film which have the same speed at noon will differ in speed at the mentioned times, when daylight contains large amounts of yellow and red. In this case the panchromatic emulsion will be of greater speed, due to its greater sensitivity to the longer wavelengths of light.

With the use of a reliable meter the photographer should experience no difficulty in obtaining correct exposures. He should, however, guard against over-exposure.

Candid Photography: Of the types of photography to which the miniature camera has been a great stimulus, candid photography is perhaps the most outstanding. Since miniature cameras have gained popularity candid photography has also come into vogue. When considering newspapers candid photographs of celebrities engaged in certain activities always were prize catches. It was, however, difficult to obtain such photographs with large cameras. Many large newspapers now provide their staff men with miniature cameras and many of the candid "shots" seen in newspapers are made with baby cameras.

Cameras like the Leica, Contax and Foth Derby which allow lenses to be interchanged, are best suited to this type of work. Besides the universal f:3.5 lens usually supplied with miniature cameras, a telephoto and speed lens are great helps in candid photography.

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SMALL-FILM-IANA

THE AMATEUR FILM AS AN ART MEDIUM

Part I

IN my last month's article I made the statement that the average cine-amateur seldom shows any originality or ingenuity in his pictures. One need only go to amateur club meetings and see some of the pictures made by the members to realize what tremendous room there is for improvement, not only from a technical standpoint, but especially from an artistic.

My suggestions in last month's article were chiefly on technical matters in which there is always room for improvement, but there's a good deal more to making a good film than setting up the camera, getting the right focus and exposure, using the right filter, and then pressing the button.

Most amateurs understand this mechanical procedure fairly well, but they do not get interesting pictures simply because they are ignorant of the principles of motion picture art, and how to use the medium with which they are working to the greatest advantage.

The cine-amateur is not entirely to blame for this ignorance, for the subject of motion picture art is a relatively new one on which there is little material published and for which there are few outstanding examples in modern American films, except in the work of some of the more prominent cinema artists. I do not speak now only of artistic composition and lighting, for no better examples of this can be found than in American pictures; I speak of a purely cinematic art form, which I will briefly outline in this article.

That more use is not made of the artistic possibilities of the motion picture in Hollywood productions is not entirely the fault of the people making them, for they are more or less slaves to a public which has not yet learned to understand and appreciate this new art form, and which, therefore, fails to support it. There are many noteworthy examples of really fine pictures which have been box office failures, so one cannot blame the producer for avoiding artistic pictures. That, however, is no reason why the amateur should not make them, for he is working only to please himself and need not worry about box office (though I do believe that artistic pictures can also have box office value—as witness "Farewell to Arms"). It is more or less up to the amateur to develop motion pictures as an art, for the commercial producer is in no position to experiment along these lines.

I hesitate to use the word art for fear its formality will frighten the amateur who thinks art is something highbrow, something rather dull, something that requires inborn ability to produce. Perhaps he has not even any intention of producing a work of art, but merely wishes to record what he sees and what is of interest to him in as straight forward a way as possible. Perhaps he is afraid to attempt the new and unusual, and prefers to follow mechanically a series of set rules. That is the wrong attitude to take, for it is responsible for the many dull and mediocre pictures made by amateurs. Most of amateur pictures are mere mechanical reproductions of nature, and hence not art. Art is never a reproduction of nature, but a representation (sometimes quite abstract) of nature in terms of the art medium, be it sculpture, painting, etching, still photography, or motion pictures. A mechanical reproduction is seldom interesting unless the subject reproduced is in itself interesting, as in the

By WALTER BLUEMEL



case of some newsreels and scientific films, which, of course, make no attempt at anything but an ordinary, unadorned, true-to-nature representation of an event, activity, or process.

But how many amateurs are fortunate enough to have subjects of general interest to photograph? And how many amateurs photograph and edit these subjects to the best advantage when they do have them to photograph? I don't think there are many. Some evidently think that pictures of their baby are interesting, but they'd be surprised if they knew how dull they are to someone who has no particular interest in the baby. I do not advise against making a photographic record of the baby, but I do advise against showing the pictures to friends and especially to strangers, unless the picture is photographed in a way which makes it universally interesting. Every pictorial subject which in itself is uninteresting can be made so by interesting and unusual cinematic treatment—by an understanding use of motion picture art.

That motion pictures can be (but not often are) art can be proved by comparing their characteristics with those of other arts. The argument against motion pictures as art has always been because of the mechanical factor entering into their production—that motion pictures are merely a mechanical reproduction of nature. Other arts, however, have more or less the same mechanical factor entering into their production. They all require tools, whether it be chisel, brush, pen or modeling tools. Even the hands are nothing more than tools, which, like other tools, can, but not need, be used to produce artistic results. Whether or not they are used to produce artistic results depends entirely upon their manipulation—a brush is used to paint a barn as well as to create a masterpiece. A robot could paint a barn, but it could never create a masterpiece. In other words, the human brain enters into the production of a work of art. It is how the brain, through its sensory aids (eyes, hands, etc.) uses the tools at its disposal in interpreting nature that determines whether the result is or is not art. The motion picture camera, like brush and paint, chisel or pen, in the hands of the creative artist is the tool with which he changes nature into an art form.

Rudolph Arnheim, in his book, "FILM" (translated from the German "FILM ALS KUNST"—Film as Art), says: "The film artist chooses a particular scene that he wishes to photograph; within this scene he can leave out objects, cover them up, make them prominent, without in any way taking liberties with nature. He can increase or decrease the size of details, can make small objects larger than big ones, and vice versa." In other words, how an object is photographed depends entirely on the choice of the film artist. Art is a matter of detail—which details are to be included and which are to be omitted. It is not so much the subject as the treatment that determines whether or not the film is art. It is difficult, especially for the amateur, to find new and unusually interesting subjects, but skillful treatment can make even a trite subject assume new interest.

Since, therefore, the effect produced in the resultant picture depends on the manipulation of the camera by the photographer, just as a painting depends on the manipulation of the brush by the artist, it stands to reason that the motion picture can be classed as an art medium.

It is a peculiar fact that an art medium is such not in spite of its limitations but rather because of them. If it were possible to reproduce nature as it is the result would not be art, for nothing new would have been created. Wax figures of a historical group in a museum are not art, no matter how real they may seem, but a marble statue in that same museum may set the art critics raving, even though the statues are obviously made out of marble or bronze. The difference lies in the fact that one is little more than a reproduction of nature, unreal in spite of its attempt to be real, while the other is a representation of nature which makes no attempt at being nature itself. It is something new. A work of art, because of the limitations of the medium, must necessarily change, even distort, nature, and since the change depends upon the limitations, the limitations become a means to an end.

The motion picture has many limitations. The most obvious of these are lack of third dimensions, absence of color and sound (this, of course, applying only to the average amateur picture), limited screen size and absence of space orientation, and lack of support from other senses. All of these and several other limitations prevent the motion picture from being an exact reproduction of nature, and become the means by which it can be made art. Color, sound, and third dimension are a step toward the reproduction of nature, and hence a step away from true motion picture art. They merely satisfy the public's craving for novelty, and lessen the necessity of imagination, which is so important in all art appreciation.

Color is a great advantage in filming certain subjects whose value lies chiefly in color, such as flowers, costumes, and particularly colorful landscapes, but its absence need by no means worry the amateur who knows how to use black and white photography. With panchromatic film and filters he can obtain effects which in many respects are more startling than if the subject

has been photographed in color. Color film is usually more unnatural than black and white photography because as yet there is no absolutely perfect color process, and the deficiencies in the existing processes detract from rather than add to the picture. The effect is much like that of a colored post card. In black and white pictures the imagination subconsciously visualizes the colors which it knows should be there, and the lack is not felt. The beauty in black and white photography lies in a pleasing distribution of light and shade, thus lending itself better to an artistic creation than color could do, since, unlike painting, the color photographer cannot control the colors. In exteriors certain over-corrections can be made with filters which produce a variation from nature frequently more pleasing than the original, while in color film such an over-correction would only increase the unnaturalness.

No one will deny that the motion picture is essentially a visual medium. Hence I do not consider the lack of sound a disadvantage to the amateur. Sound has a rightful place in motion pictures only if it is used to enhance, to emphasize, the visual and does not take its place. If sound is predominant the picture degenerates into the realm of the stage, as was so often the case in early talking pictures and still frequently is, thus changing into another, and a less expressive, art form. It has been proved time and again that what we see remains in our minds much longer than what we hear, and it is, therefore, a mistake to substitute sound for the more powerful visual possibilities offered by the motion picture. The amateur, consequently, should not consider lack of sound a drawback, but should make use of this lack by substituting for it the visual. This is not always easy to do, but the result will be more gratifying and more artistic than if sound, of the inevitable substitute, titles (which like sound should never take the place of what can be shown visually), had been used. This, of course, applies only to purely dramatic pictures, for sound is of great value to newsreels, travelogues, educational, commercial, and scientific subjects.

A good musical score will, however, prove to be a valuable aid to any silent picture, for it pleasantly occupies the oral sense without detracting from the visual. Music is in many respects to the ear what the motion



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RUDDY GERAUS

picture is to the eye, and a skillful combination of the two is of considerable benefit to each. It will be noticed that if the picture is sufficiently engrossing the musical score will always be subsidiary—its effect being subconscious—which again proves the fact that the visual is more powerful.

PART OF THE STORY OF LIGHTING

(Continued from Page 12)

Such is a part of the history of lighting. It is such a small portion of it. There is the high speed rotary made by Ide in 1920, there are the experiments of a large number who dreamed of the perfect light, there is the hurrying and scampering of the "juicers" who had to nurse and trim the early arcs to keep them going. There are those who said lights would never be used and there are those who, perhaps far in advance of their time, used a light similar to the neon light. They were, according to Steve Hansen, the Swedish Biograph, who in 1920 equipped their studio with the MacFarlane Moore tubes.

Lighting and artistry in photography at its best today is such that it seems impossible that improvements could be made. Improvements will be made; the stuff on the screen today is the stepping stone for that coming tomorrow. "To better conditions," says Ruby Wallace, "we must have experience to guide us."

To Lou Blix, Charles Munroe, Duke Daggy, Gary Sullivan, Lou Johnson, Ernie Simpson, Roger Nauman, Phil Coats, Wally Oettel, Frank Murphy, Leo Whistler, Bill Johnson and scores of others goes the credit of the lighting on the screen today. To them should be accorded THANKS! They are the "gaffers."

ACADEMY RESEARCH COUNCIL

(Continued from Page 9)

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SAYS GEORGE H. SCHEIBE:

Many an amateur I have heard say: "I wish I could use your filters on my camera to produce the many effects I often see on the theatre screen, but what kind of a holder should I use?" That's still the big question of today. Holders in use today are mostly of the cell type and slip over the lens. Naturally this means a holder for every diameter of lens and too, a filter to fit it. The ideal holder is the type used on the 35 mm. motion picture cameras. This holder has three distinct adjustments—one to vary the space between the lens and the filter—a side to side movement and an up and down to permit the correct use of Graduated Sky Filters and various irises for close-ups and inserts. Such a type of holder can be made to fit all amateur cameras; attached to the camera (not on the lens) and accommodating 2x2 square filters. The amateurs want just such a holder, so get busy, camera accessories manufacturers, and bring out a reasonably priced one—it should sell fast everywhere it is shown.

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33

6-B

MISCELLANEOUS DATA

RUNNING TIME AT VARIOUS CAMERA SPEEDS FOR USE IN
CHECKING THE SPEED OF CAMERA MOTORS
35mm. FILM

Camera Speed in Pictures Per Second	FEET OF FILM				
	5	10	15	20	30
	RUNNING TIME IN SECONDS				
6	13.3	26.6	40	53.3	80
8	10.0	20.0	30	40	60
10	8.0	16.0	24	32	48
12	6.6	13.3	20	26.6	40
14	5.7	11.4	17.2	23	34.3
16	5.0	10.0	15	20	30
18	4.4	8.9	13.3	18	26.6
20	4.0	8.0	12	16	24
22	3.6	7.3	10.9	14.6	21.8
24	3.3	6.7	10	13.3	20

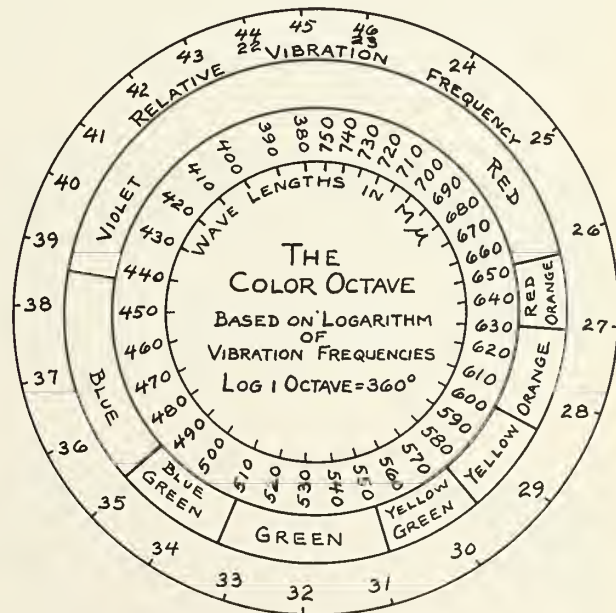
FAST WORKING FIXING BATH

WATER (Warm)	-	-	-	-	-	-	-	-	-	16 oz.
HYPO	-	-	-	-	-	-	-	-	-	8 "
POTASSIUM METABISULPHITE	-	-	-	-	-	-	-	-	-	3/4 "
CHROME ALUM (double amount in hot weather)	-	-	-	-	-	-	-	-	-	3/4 "
AMMONIUM CHLORIDE (Sal Ammoniac)	-	-	-	-	-	-	-	-	-	3 "
WATER (cold) to make	-	-	-	-	-	-	-	-	-	32 "

COPPER WIRE TABLE
National Electrical Code

Wire Size. Gauge Number	Diameter of Wire in Inches	Resistance In Ohms Per 1,000 Feet	Carrying Capacity In Amperes Rubber Insulation
18	.040	6.6	3
16	.051	4.0	6
14	.064	2.6	15
12	.081	1.6	20
10	.102	1.0	25
8	.128	.64	30
6	.162	.40	50
4	.204	.25	70
2	.258	.16	90

THE COLOR OCTAVE

WAVE LENGTH AND RELATIVE VIBRATION FREQUENCY
OF THE VARIOUS COLORS THAT APPEAR IN
THE VISIBLE SPECTRUMThe indicated colors may be drawn in around the outer ring with
sufficient accuracy for illustrative purposes by using colored pencils.

MOTION PICTURE SOUND RECORDING
(Continued from Page 21)

ear in the chart. Likewise, the maximal intensity that must be handled by a sound system is some thirty decibels less than the absolute maximal for the human ear, because the additional thirty decibels of sensitivity is necessary only for the great volume of sound produced by such things as explosions and big-gun fire.

From these figures, it is evident that a sound recording and reproducing system capable of handling an intensity range in the order of seventy decibels under normal operating conditions would be entirely satisfactory. Given that intensity range and true fidelity of recording and reproduction throughout a frequency range of thirty to 10,000 cycles, or double vibrations, per second a sound system would be as perfect as human hearing would require. Until such an intensity range is obtained, however, the monitor man must be careful that he keeps the level of the speech current fed to the recording amplifiers recording amplifiers in the amplifier room, the point to within the limits of the system.

This chapter concludes the series of chapters on monitoring. The next chapter will begin the discussion of the recording amplifiers in the amplified room, the point to which the speech current is fed by a transmission line after leaving the main volume control in the monitor room.

MINIATURE CAMERAS AND PHOTOGRAPHY
(Continued from Page 23)

The telephoto lens allows individuals to be snapped at a distance, so that they can be caught unawares. The photographer can position himself at a considerable distance from his subject, adjust the lens as to diaphragm and distance settings, and then shoot the picture at the proper time.

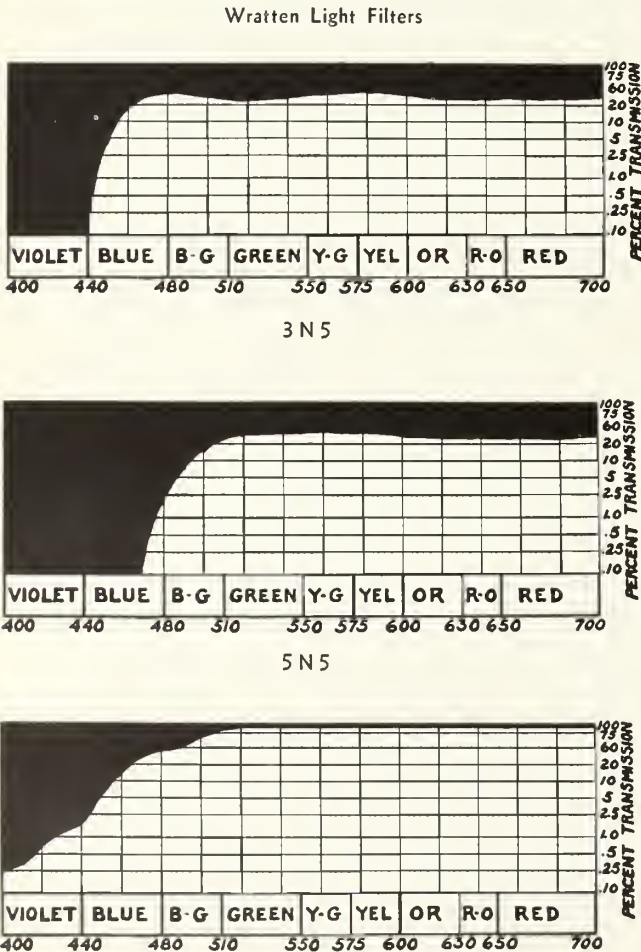
The speed lens opens up possibilities of taking photos in well lighted interiors and streets. With lenses of speed such as f:2, f:1.9 and f:1.5 available and fast films like the Eastman Supersensitive Panchromatic, DuPont Superior, and Agfa Superpan, exposure in well lighted interiors should present no difficulty.

Users of the Leica camera now have at their disposal a unique accessory which is a great aid in candid photography. This is a Photoflash device which synchronizes with the shutter. It consists of a metal tube which fits into the clip in the top of the camera, a folding metal reflector, and connections for the camera shutter release button. A small pilot light is provided which is used to properly synchronize the flash with the shutter. Once this synchronization has been established it is not necessary to use the pilot light any further. This outfit will accommodate the three sizes of Photoflash bulbs.

Another aid to candid photography of which the Leica owner can avail himself is the angle view finder.

6-A 34

FILTER TRANSMISSION GRAPHS



Data by Eastman Kodak Co. Wratten Filters. 1932 Edition.

8mm. FILM DATA

ANGLE OF VIEW AND SIZE OF FIELD EMBRACED BY CAMERA LENSES

SIZE OF PICTURE OBTAINED IN PROJECTION AT VARIOUS DISTANCES FROM THE SCREEN

Distance To Subject In Feet	13mm. Lens		38mm. Lens		Size Of Picture On Screen In Inches	Distance To Screen In Feet 1 Inch Proj. Lens	Screen Magnification In Diameters
	Vertical 14½°	Horiz. 19¼°	Vertical 5°	Horiz. 6½°			
	Height and Width of Subject Included In Picture						
1	.25 by	.33	.08 by	.11	9.0 by 12	5.8	69
2	.50 by	.67	.16 by	.22	10.5 by 14	6.8	81
4	1.00 by	1.35	.34 by	.46	12 by 16	7.6	91
6	1.52 by	2.03	.52 by	.69	13.5 by 18	8.7	104
8	2.03 by	2.70	.69 by	.92	15.0 by 20	9.7	116
10	2.54 by	3.38	.86 by	1.15	16.5 by 22	10.6	127
12	3.1 by	4.1	1.0 by	1.4	18.0 by 24	11.6	139
14	3.5 by	4.7	1.2 by	1.6	19.5 by 26	12.5	150
16	4.0 by	5.4	1.4 by	1.8	21.0 by 28	13.5	162
18	4.6 by	6.1	1.6 by	2.1	22.5 by 30	14.5	174
20	5.1 by	6.8	1.7 by	2.3	24 by 32	15.4	185
25	6.3 by	8.4	2.2 by	2.9	27 by 36	17.3	208
30	7.6 by	10.1	2.6 by	3.5	30 by 40	19.3	232
40	10.1 by	13.5	3.4 by	4.6	33 by 44	21.2	254
50	12.7 by	16.9	4.3 by	5.8	36 by 48	23.2	278
75	19.0 by	25.3	6.4 by	8.6	39 by 52	25.0	300
100	25.3 by	33.8	8.6 by	11.5	45 by 60	29.0	348

Based on Projection Aperture .130 by .173 of an inch.

This device fits into the clip of the camera so that its eyepiece is at right angles to the lens. In using it the photographer is facing at right angles to the direction of the lens and the subject is therefore unaware of the fact that he is being photographed.

To the photographer who is thoroughly familiar with his miniature camera and can bring it into action at a second's notice, indulgence in candid photography should yield some interesting results.

A New Camera: The Rolleicord, a small brother of the popular Rolleiflex camera, is now with us. Essentially, the Rolleicord is built along the same lines as the Rolleiflex—a twin lens camera in which one of the lenses is employed as a finder lens. Being a product of Franke & Heidecke, the fact it is a precision instrument is precluded.



The Rolleicord is equipped with a Zeiss Triotar f:4.5 and includes such Rolleiflex features as compensation for parallax, absolutely rigid focusing mechanism, frame finder for sport pictures, etc. It is manufactured to sell at a lower price than the Rolleiflex camera. Although the Rolleicord presents exactness and precision throughout, the Rolleiflex is possessed of additional advantages such as a faster lens, Zeiss Tessar taking lens, joint viewing window for shutter and diaphragm readings, alternative use of plates and cine film, direct focus-

ing on ground glass screen for reproductions, etc. Since it possesses many of the advantageous features of the Rolleiflex, the reasonable price of the Rolleicord should prove popular with miniature camera enthusiasts.

Printing Coarse-Grained Negatives: At times through some uncontrollable factors, or some oversight, a valuable negative is not processed properly with the result that its grain is extremely coarse and reasonably sized enlargements cannot be made from it.

Two methods may be utilized to minimize the grain in order to obtain a successful print. The first, which is recommended by the Eastman Kodak Co., is to employ a substance which has the same refractive index as the film base. Glycerine answers this purpose. Some glycerine is poured on the negative carrier, the negative being placed on it. A little more glycerine is poured on top the latter. The negative carrier is then closed and a little pressure applied to eliminate air bubbles. Remove all excess glycerine that oozes out from the carrier, place the latter in the enlarger, and proceed to print. The negative is subsequently washed to remove the glycerine and is then hung up to dry.

The second method is to make another larger negative. A print of the negative is made upon film such as commercial ortho film. The print is processed, after which it is placed in the enlarger and a small enlargement made upon the same type of film as was used to produce the contact print. This enlargement is now processed with extreme care, using fine-grain developer. Prints on paper are made from this new fine-grain processed negative.

This method can also be used in cases where retouching is necessary such as in portraits. The miniature negative is too small to allow retouching.

Quick Drying Aids in Fine Grain: It has been definitely proven that the rate at which the film is dried is also a factor in determining the fineness of the grain in the negative. Fast drying is productive of fine grain, whereas if drying is prolonged over a long period coarse grain is apt to result.

The first requisite to fast drying is free circulation; an electric fan will serve this purpose nicely. Another agent which can be employed for this purpose is a volatile substance such as alcohol. After the film has been completely washed it is either dipped into alcohol for a minute or two and hung up to dry or it is passed through the folds of a chamois skin moistened with alcohol.

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MISCELLANEOUS

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TRICK PHOTOGRAPHY. Exclusive agency for three leading Hollywood makers of trick lenses. Apply for prices and demonstration, sale or rentals. Camera Supply Co., Ltd., 1515 Cahuenga Ave., Hollywood.

"NEWS FLASHES FROM JAPANESE MOVIEDOM"*(Continued from Page 7)*

Miura, one of the ace cameramen there, who is now working with him, wrote me recently saying that Mac-Inerny's Japanese is now so perfect that it really is a profound amazement and a great achievement for Mac-Inerny. The W. E. System certainly picks the sound all right.

* * *

The Nikkatsu Studio is going to move from its present site, Kyoto, to Tokyo, three hundred miles apart. Kyoto is said to be Japan's Hollywood, owing to the fact that it is the center of cinema making. The city itself is the old replica of the ancient Japan surrounded by beautiful sights and sceneries with the old buildings still remaining as it were in days of yore. Many location shots were made within the city's limits for the costume play pictures. The main reason for the studio to abandon such a convenient place is because the people there speak the typical Kyoto dialect which is not the standard language of Japan. The actors should speak the Tokyo tongue which would be understood everywhere in the Empire when "chatter-chatter" comes on the screen. A huge modern studio is being built on the outskirts of Tokyo today.

* * *

Three new theatres have been added to the capital city recently. One of the three is constructed solely for the purpose of presenting musical revues. The "Nippon Theatre" is the largest with a seating capacity of 5,000, and its entire seven-story building is devoted for entertainment purposes. The theatre occupies up to the fifth floor, while the sixth is maintained as the restaurant. A magnificent and spacious ball room is provided for the people who wish to dance after the show on the seventh floor. They have a two-storied basement in which a small theatre is built for the previews of pictures and stage presentations. It is also for rental purposes for the small groups or the amateurs who wish to present their own plays. This theatre was opened December 31st last, showing the Fox picture "Cavalcade" and Warner's "Gold Diggers of 1933," together with the most spectacular and elaborate stage performances ever presented. "City Lights," Chaplin's picture, followed and the best seats cost seven and one-half dollars—all sold out a few weeks in advance. For some reason this picture was kept in the Yokohama custom house until recently.

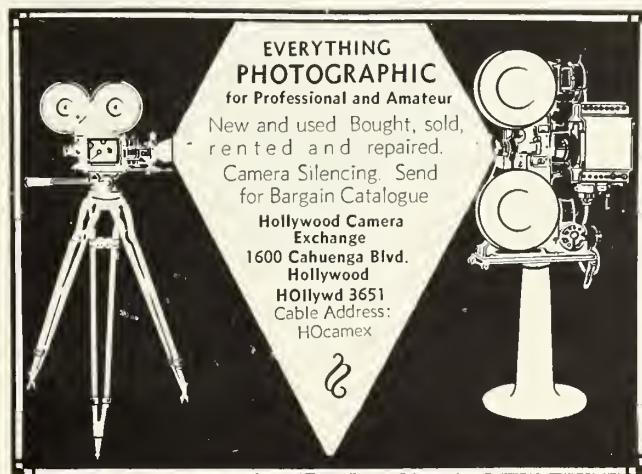
* * *

The P. C. L. Studio (Photo Chemical Lab.) in Tokyo is the newly constructed studio and is best equipped and quite a number of "Big Shots" who have made trips to Hollywood, are under the long term contracts. They have made two or three features so far and the future is said to be very promising. Not long ago the studio manager made various policies and regulations for the employees. His ideas were to follow the American business way. I am informed that the Japanese pro-

ducers are making an effort to emulate the Hollywood studios in all things. Among the policies it said that shooting of pictures should commence at 8 a. m.; lunch from 12 to 1 and shooting to cease at 5 p. m. regardless of how far their schedule has been followed. They do not work at night unless it is unavoidable. Well, some smart "Big Shot" must have misinformed them about Hollywood studios' quitting time.

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A fine B & H humidor can is available for storing 8 mm. film on the new B & H 200-foot 8 mm. reel. This can is of aluminum, which does not rust. Its design and construction are the same as the popular B & H 400-foot 16 mm. humidor, including the pressed rings which give rigidity and facilitate opening, and including the patented tell-tale disk which tells when the humidor pad needs moistening.



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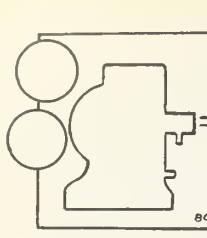

BASS CAMERA CO.

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Chicago, Ill.

**See Page 27 for Announcement of
Fred Westerberg's Cinematographer's
Book of Tables**

Out of Focus

By Otto Phocus

"THOUSANDS CHEER"



This study in "Nature Photography" (good and bad) portrays a section of the throng that attended the soiree mentioned in the article below and was shot from the luncheon camera of Paul Cannon, who "bangs" away for the Chicago Daily Times. Telephone wires, poles and undesirable fences have been eliminated by the proper placement of the camera. If this print appears too contrasty, try soaking it a few times.

Mr. Briggs had another birthday party and about 125 cameramen and cinematographers celebrated it at the Russian Club on the evening of March 19th. The announcement stated: "The hours from six to eight P. M. will be reserved for saying 'Hello'."

Just about the time it looked as though some of the customers were ready to say "good-bye" the clock clunked eight and we repaired to the mess hall and were seated.

A musician played Two Guitars on a violin and was assisted by the orchestra and then the food began.

"What is this," inquired MacStengler.

"Dot's fried chiggen," answered the Russian waiter.

"It looks like fried rabbid," said Mac as he reached for another helping.

We discovered later, by inquiring at the research department that it was JARNEY ZAITZ.

Simeon Aller then made a speech and it was translated by Wesley Smith and approved by Shamroy, Campbell and Moyse.

There was no singing, due to lack of harmony, but a few more rehearsals like the birthday party might encourage it. Many jokes were told at the tables by the different groups, and it has been reported that some were good.

We were entertained royally by Royalty and got to see a good deal of the countess in one of her numbers.

Simeon mentioned something about some kind of film being very good and announced the next act was about some Russian cab drivers. I was all set to enjoy this, but could not understand the dialogue. It must have been funny though, because I saw Paul Ivano laughing. There were others that must have enjoyed it, but as they have changed their names, I was not sure. Another Russian did a sword dance (they always do), and he played mumble-ty-peg with a machete and instead of doing fingers he did lips.

It was recommended that we bury the hatchet, but someone suggested a hatchet was too dangerous a weapon to try to bury. Especially if it was buried in the wrong place.

Sauterne was served in glasses and this was not an inferior product. (See DuPont Ad).

I waited as long as I could, but finally had to go and, on the way back, stopped to talk to one of the dancers for a second. When I got back to my table, dessert and coffee had been there and gone.

The dancer said she could understand English, but could not understand me. Well! I was only "foolin" and besides she was married.

Mr. Briggs gave a nice talk and said he hoped to be back with us again, on his next birthday.

SO DO WE.

DO YOU KNOW

That Alex Kahle entered the motion picture business in 1902 and worked for Nestor, Decla, Maxine and UFA before embarking.

That Glen Kerschner was awarded a diploma at the International Exposition of Cinematography, Torina, Italy, for the best photographed picture of the year—1923.

That Si Snyder (our editor) was Chief of Publicity for Balboa Studios in 1915.

That Fred Kaifer expects to have a coming "in" party. Hair.

That when Bert Anderson was a window trimmer he swallowed a tack, but never had a chance to sit on it.

That Tommy Riddell, 7722 Santa Monica Boulevard, has a complete and satisfactory line of supplies for the cameraman. Both young and old. Ask to see and hear the "Babola" F:5.6 line.

That Mrs. Tom Brannigan reports—little Joe can say AH! GOO! (?)

That James Joseph Michael Goss has more freckles than a business agent has troubles.

That Lyman Broening has returned from New York, Baltimore and business.

That Bert Glennon writes articles and stries for magazines. And sells them.

That Ernie—after all these years—is fooling around chickens. On a ranch in the valley.

That Paul Ivano blew up his last name when he became civilized—I mean naturalized. It is Ivanichivitch and when translated into the Scandinavian is Johnson.

That there was a Twentieth Century Film Company in 1917.

That Mickey Whalen reports: A cameraman made out his will and asked that his ashes be scattered over a certain studio. When asked why, he replied: "It is the only way I will ever be able to get on the lot."

That Arthur Martinelli was with International in 1915.

That Ned Van Buren had a reputation as a lens collector in 1916.

That when Wm. Marshall was with Famous Players in 1916 he received publicity for the large diamond he wore.

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INTERNATIONAL PHOTOGRAPHER

—HOLLYWOOD—

TH YEAR

MAY, 1934

VOL. 6
NO. 4



25 CENTS
A COPY

The Independent steps into the limelight offering "Our Daily Bread" - a sign of the times. Production crew, left to right—Russell Harlan, assistant cameraman; Reggie Lanning, operative cameraman; pointing, King Vidor, producer, director and author; Robert Planck, first cinematographer; Elizabeth Hill, screen adapter; concealed, Madison Lacey, Stills. United Artists will release.

PHOTOGRAPHED BY
MADISON LACEY

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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 6 HOLLYWOOD, CALIFORNIA, MAY, 1934 No. 4

SILAS EDGAR SNYDER, *Editor-in-Chief*

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HELEN BOYCE, *Advertising Manager*

A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing, Film Editing, Sound Recording, Projection, Pictorialists.

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This Magazine represents the entire personnel of photographers now engaged in professional production of motion pictures in the United States and Canada. Thus THE INTERNATIONAL PHOTOGRAPHER becomes the voice of the Entire Craft, covering a field that reaches from coast to coast across North America.

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ANNOUNCEMENTS FOR JUNE

Our Surprise Number, intended for this issue, has been deferred to an edition later in the summer.

Small-film-iana, the 16mm. department so ably edited by Walter Bluemel, will present another instructive article along lines of practical production.

Charles Felstead, associate editor and sound recording engineer, who is taking a vacation this month, will be represented in the June issue by Chapter IX of Motion Picture Sound Recording.

Augustus Wolfman will offer his admiring readers several more sheets from his note book on Miniature Camera Photography. Mr. Wolman's department is a regular feature of the magazine.

Mr. Charles P. Boyle, inventor, manager and sole owner of "Out of Focus," our comic feature so popular with his fellow camera-men, will offer something slightly different in the June issue.

Earl Theisen will grace the June issue with one of his most interesting articles—valuable to technicians and interesting to the general reader. His subject is "Tricks" and it is in every way a feature article.

Paul R. Harmer, who has been attracting attention with his practical articles on studio technique, has promised another useful and interesting story and he may tell us also about shooting volcanos at short range.

And there are a lot more interesting yarns coming up. And by the way the subscription price of International Photographer is only \$2.00.





EARL THEISEN'S Hollywood Note Book

Honorary Curator Motion Pictures Los Angeles Museum

[Member of the Faculty as Lecturer in the Department of Cinematography, University of Southern California.—Editor's Note.]



AN'T is an obsolete word in Hollywood. They don't use the word any more. An illustration of this is the artificial waterfall made at RKO Radio. On stages 8 and 9, in a space of 20,000 square feet, is this indoor pool. It is made of plaster to resemble granite and the water coming from a fire hose at full capacity falls fifty feet into this artificially rock-bound pool. Around the edge of the pool are some fifty cocoanut palms made of stuff by the artisans over in the trick department.

On the synthetic bench of a lagoon is a 150 foot wrecked yacht. If you don't think this seems like the real thing go and see "Down to Their Last Yacht."

Most of the action of the picture will take place on this setting which is the tropical island of Malakamokalu. Eddie Cronjager, the camera artist, has about 200 angles in the setting. Some 500 extras are scheduled to be taken from the "forgotten man" list for the picture.

* * *

Have you seen the Technicolor three-color sequence in the "House of Rothschild?" That is the color process that J. A. Ball of Technicolor has been working on for years and which was shown in this real life picture for the first time.

It is practically the same process which is used in the Walt Disney Silly Symphonies that have been praised and welcomed by art critics.

When you see this color on the screen, do not let your judgment be influenced by bad memories of past attempts at colored motion pictures. There is a natural dislike for color due to the poor and unnatural color of the past; but forget the psychological aspects and open your eyes and mind to this new color. In it is a promise of good things in color if the box office won't "thumbs down" after reasoning like this: All colored pictures of the past have been bad; this is a colored picture, therefore, it is bad, too.

The old color process photographed only two colors and in those two colors tried to make natural colors; whereas this new process records the three primary colors. As is known, practically any color can be rendered by blending the three primary colors.

* * *

Speaking of thrills in the movies! The other day Wheeler and Woolsey had a wild boar hunt, on a stage at RKO, for their picture "Cockeyed Cavaliers." The studio imported a 375 pound boar from Santa Cruz Island and turned him loose on the set. In turning loose the boar, one of the carpenters got too close and the boar bit the hickory handle of a hammer hanging on the carpenter's hip.

The comedians engaged the beastie, armed with tin foil spears and their sense of humor. Because these weapons might fail, the studio had the well known sharpshooter, Pardner Jones, with a high powered rifle, set

on a parallel overlooking the set. "And to think," sighed the comics after the filming was over, "folks go clear to Africa to be scared by big game."

That was one instance in the movies when a thrill was provided by a boar.

* * *

Clark Gable forgot to put on his dark glasses the other day when he left the studio. Result: He spent a half hour in the autograph business.

His holiday in the East last month cost him a couple dozen silk handkerchiefs, twenty-seven coat buttons and one shirt sleeve. He felt the shirt sleeve rip and saw it go disappearing in the crowd in Kansas City. Most of the handkerchiefs were given away in Baltimore and the buttons were pulled off his clothes between Hollywood and New York.

In Baltimore, the police would not let him return to his hotel because of the vast crowd. He had to stay in another hotel. And in Kansas City the Chief, the crack Santa Fe transcontinental flyer, was delayed while police got Gable to the station.

* * *

"There are 127 major studios in Japan," according to Roanna W. Hill, Assistant in the Department of Cinematography of the University of Southern California. "Sixty-one of these produce educational films." Japan's Department of Education spends approximately \$125,000 a year in producing patriotic and other films depicting the life of her people. On the other hand we won't say what the United States Government is doing toward furthering the use of films in education.

* * *

According to a recent survey 77,000,000 people see motion pictures every week, 11,000,000 being children. That is a very conservative estimate, since other surveys have placed those figures much higher.

* * *

Victor Fleming keeps a "dead man's chart." In filming Robert Louis Stevenson's "Treasure Island," at M. G. M., so many pirates are movie-killed that he found it necessary to make up a list so a pirate once killed won't appear in a later scene.

* * *

Because it is unlawful to photograph real money, M. G. M. has installed their own mint. They make movie money in all denominations, including both coins and paper. They made a special money for Viva Villa with a picture of Wallace Beery; doubloons and "pieces of eight" for "Treasure Island"; special money for a picture of Garbo as "Queen Christina"; and fictitious money was made for the "Merry Widow." This is just one of the many features that enter into studio routine when making a picture.

Did you ever stop to realize, for example, just how many complaints would be sent the studio if they used

the wrong kind of buttons on an English postman's costume for 1915, or the wrong helmet in a Luxembourg police uniform as worn two summers ago.

* * *

A revolving set has been used for the first time to advantage in the filming of RKO's "Of Human Bondage," starring Leslie Howard. In order to expedite the showing Director John Cromwell installed four sets from a sequence in this picture on a revolving platform. He shot the entire sequence without the necessary "setting up" for each scene. The lights and camera remained stationary, while the proper scenes were wheeled around to them. Henry Gerrard was the cameraman.

* * *

It is a pleasure to announce that Helen Hayes will return June 1. She will star in the Metro-Goldwyn-Mayer production of Hugh Walpole's romantic story, "Vanessa." Let's look forward to Cameraman Bill Daniels doing another job on this like he did on the Helen Hayes "White Sister."

* * *

Another racket has sprouted in Hollywood. Not satisfied with selling the film folk very rare perfume that has been smuggled from somewhere and turns out to be perfumed water; digging up the "facts" on the star's past life; supposedly "valuable" fur coats which are sold generally to men who try to please someone; and a host of other come-alongs; they have now developed the "signature-grabber." This varmint—I don't mean the sincere fan—gets an autograph which is used as an endorsement for hosiery, liquor, beauty preparations and a dozen other commodities exploited under their name. John Miljan was asked for an autograph. When he started to sign he noticed that the paper was folded. It turned out to be a blank check.

Of course the signature-grabber is subject to legal action. In order to get around misuse of their names, most of the film folk have one autograph for the fan and another for legal use.

* * *

To match their Van Dyke expedition to Africa to get "Trader Horn" and to Alaska to get "Eskimo," Metro-Goldwyn-Mayer are sending out another expedition to the Amazon country for "Jungle Red Man." The director, George B. Seitz; Harold H. Noice, author-explorer, and Joe Cook, business manager, have gone to an Indian village, Yarawate, in the heart of the jungle,

to make ready the way for a larger expedition that will follow in three months.

The picture will have an all-native cast of primitive Indians living on the headwaters of the Amazon. M-G-M's policy of bringing the far corners of the world to the screen in this authentic manner is commendable and one that is vital to the expansion of the industry. It is just a question of time until more pictures will have to be made with something besides what happens between a man and a woman.

Their picture, "Eskimo," brought to the screen a comprehensive idea of Eskimo life and it was presented entertainingly. The picture presented the Eskimo, in eighty minutes or so, better than any number of geographies. It was valuable entertainment.

That doesn't mean that all pictures should be geographic, or for that matter smell of the classroom, but more attention can be given the social aspects of the picture. It is not necessary to glamorize the crook, glorify unwanted conventions, or depict a preponderance of wealthy settings. A poor man's home never looks poor. Persons are shopping for their pictures now as never before. They are looking for pictures that broaden their experience, that solve certain problems for them, that satisfy inherent interests and many, many other elements that deal with "just living."

Did "Cavalcade," "All Quiet on the Western Front," "Seventh Heaven," "Sweepings," "Grand Hotel," or any other picture that you really remember, and about which you told your friends, deal with natural, convincing people and places?

* * *

Walt Disney is building a large addition to his studio. Eventually he will have a community of his own there on Hyperion Drive. Some day letters may be addressed to "Walt Disney's Land." That is because people—black, white, yellow and in-between shades, whether five years or a hundred years old, like his contributions to the screen.

When Walt Disney's Land becomes a state, I will move next door and spend my time looking over the fence.

* * *

They had colored cartoons as early as January, 1919. At that time Pinto Colvig, who is prominent in cartooning today, drew a series called "Pinto's Prizma Comedy Review." They were colored by the William V. D. Kelley Prizma color.

DeVRY LINE ON PARADE

Mr. Herman A. DeVry, president of the DeVry Motion Picture Equipment Company, of Chicago, recently visited with his Southern California agent, Mr. Phil Misenzahl of the Educational Projecto Film Company, 1611 No. Cahuenga, Hollywood, where Mr. DeVry had on display his new complete line of motion picture cameras, projectors and accessories.

This display consisted of a 35mm. sound on film, single system, portable camera; a theatre size sound on film projector utilizing either incandescent or arc light; improved 16mm. camera and a 16mm. sound on film projector.

Mr. Phil Lasher, Northern California DeVry agent with offices at 254 Sutter Street, San Francisco, joined Mr. DeVry in Hollywood.

This DeVry line is attracting a lot of attention and judging by the number of visitors attendant upon the display, the visit to our Film Center will not be a disappointment to either Mr. DeVry or Educational Projects Film Company.

From Hollywood Mr. DeVry will go to San Fran-

AFTER A WORLD'S MARKET

Charles H. Christie, veteran comedy producer and motion picture pioneer, has been made vice-president of the Mitchell Camera Company. Henceforth, he will be associated with Stanley S. Anderson who, as chief executive, has been directing the destinies of the company for the past two years.

As Vice-President, Mr. Christie's special task will be to cultivate a world-market for the Mitchell camera. He will go abroad, early in May. His itinerary will include Japan, China, India and thereafter the leading European countries—Italy, France, England, Germany and Russia. Among the foreign capitals Christie will visit are London, Paris, Berlin, Rome, Moscow and Leningrad.

Few picture people are better known than Charles H. Christie. He was one of the first producers to come to Hollywood and has contributed as much to the upbuilding of Filmdom's capital as any other one person.

cisco and other big cities on the West Coast where the DeVry line is represented.

WITH CAMERA AND COMPASS IN THE CARIBBEAN

By LEWIS H. AND HELEN L. DAVIS

(Contributed by Karl A. Barleben, Jr.)

FEATHERY casuarina trees bowing gently to the warm trade winds, a dazzling white beach edged with emerald green water, endless acres of deep blue sea ending against the paler blue of tropic skies. Magic islands sloping from indigo seas to be adorned with the geometry of yellow-green sugar cane fields and then lost in cloud. Rippling muscles of sweating blacks glistening in the sun as they row huge sugar-laden lighters from shore to ship, the silver streak of a flying fish against the indescribable blue of tropic seas. After six months of sailing through the West Indies, such memories become a part of you.

And they become the more a part of you if you have sailed your own boat a couple of thousand miles to get them. Leave New York on a chill November day, ride out a five-day gale off Cape Hatteras, sail two thousand miles without seeing land, and you are ready to drink deeply of the exotic beauty of these islands.

At least that is the way we found it to be. Perhaps a thirty-seven foot boat (*The Seal*) is a small one for such a trip. Perhaps two men and one woman is a small crew. And perhaps twenty-five hundred miles is a long way to go, but now that our cruise is ended we know that every hardship and danger of our trip had a large part in preparing us for our initiation into the mysteries of the islands which Columbus named.

There are those who have made trips to interesting foreign lands and have returned nursing the regret that they had no good photographs to augment their memories. Fortunately, we are not of that unhappy group, for we have several hundred good negatives to help carry us back to warm tropic waters and mystic green islands.

It might have been otherwise. Almost baffled by the unending expense and time necessary to fit a boat for a deep sea trip, we were tempted to slight our photographic equipment. Fortunately, we decided against this course and in the end, carried a camera and accessory equipment which would insure something besides memories.

We took with us a Leica camera fitted with an Elmar f:3.5, 50 mm. ns, twenty-five rolls of orthochromatic and a quantity of panchromatic film. In view of the necessity of developing films soon after exposure in the tropics, as well as the questionable efficiency of the film service in the islands we hoped to visit, we took a Leica developing tank, thermometer, and chemicals for mixing our own solutions. Before sailing, we had a chemist measure out the proper quantity of each chemical necessary to our standard solution, put each in a test tube and scratched the glass at the proper level. We then labeled each tube with a strip of adhesive tape and marked it with India ink. Knowing how full each test tube must be for the correct weight of a given chemical, we did away with the need of scales which should have been ruined by the salt air and dampness. We sacrificed a precious portion of our water-proof lockers for our materials, and fortunately, for on several occasions the contents of these lockers were the only reasonably dry articles in *The Seal's* cabin.

A week after leaving New York we had our first and last bad experience in an unique field of photography. When two hundred miles to the east of Cape Hatteras

we ran into what we egotistically call "our gale." For five days and five nights, mountains of seas battered our little ship, tearing to bits one of our sails and smashing the small boat we carried on deck. For several days and nights we feared our hatches might also be smashed. Had they broken in, it would have mattered little what else was smashed. On the morning of the fourth day we peered through the port-holes to watch a huge, wallowing tanker come close by to us to see if we wished to desert. Even if we had been willing to take further risks in our ship we could not by any stretch of the imagination see how we could have gotten to the deck of the tanker. We decided against abandoning ship and signalled our message as best we could.

Just how we managed to get some twenty pictures of our would-be rescuer as she rose and plunged in those seas we do not know. The great difficulty was not the risks taken in getting the snaps—it was simply in getting ourselves to try. We didn't want to. Why? Perhaps we felt that it would be futile to make snaps which might never be developed. Perhaps it was that if we did eventually survive these endless days and nights of raging seas we would not care to have a photographic reminder of the forces that threatened our lives. Or perhaps it was merely because of the utter unappropriateness of thinking of pictures when we were being forced to decide a question which might be one of life or death.

At any rate, we got out the Leica. The tanker was standing by two hundred yards away. After a sea had thundered across us, we would open the hatch and try to get a shot before the next sea came. Sometimes we miscalculated and the reeling cabin was soaked once more. Sometimes we would emerge for a picture only to find that our subject was completely hidden by a towering sea. We managed, however, to get an entire roll of pictures. The possibility of making rapid exposures with our Leica and the impossibility of getting double exposures was largely responsible for our success. After twenty minutes the tanker left us to our fate. Perhaps the captain felt that, if we were foolish enough to make pictures at such a time, we might be lucky enough to get through alive.

From Jacksonville, Florida, we took a twenty-five hundred mile hop to Barbados, British West Indies. Twenty-seven days of glorious sailing. For two weeks we sped to the eastward and for two more we journey southward. There was a week of the "Horst Latitude" when we lazed along through long swells before gentle winds. Sometimes the sea was so smooth we experimented with time-exposures in the cabin, or climbed to the masthead for vertical pictures. There was another week of trade winds when we alternately tried to photograph the dolphins as they sped past us and to harpoon them. Our evenings were often devoted to developing the day's "shots." The helmsman was generally the developer—one hand on the tiller, eyes on the lantern-lighted compass card, and the other shaking the developing tank. When both hands are needed for changing solutions, the foot on the tiller will do as well as the hand.

On the twenty-seventh day out we picked up our first foreign island—Barbados, and there began three months of glorious hours spent among these astonishing islands.

We had been ashore at Bridgetown, Barbados, for only a few hours before we discovered the advantages of a small camera. Barbadian negroes, we learned, have sufficient genius to smell out the tourist without help of that world-wide symbol, the visible camera. To walk through the streets of Bridgetown with a big camera slung over the shoulder is to offer yourself as a victim

Serious camera work develops a sense of the artistic.

Our most interesting experiences came in the Island of Dominica—the most mountainous, the heaviest-wooded and, we thought, the most beautiful of the West Indies. Dominica is the home of the remnants of the original inhabitants of the Islands—the Caribs. Five hundred of them live on the windward side of the island on a reservation approachable only on foot. We decided to hike across the mountain to see them—a distance of forty miles over an old Carib trail gouged in the side of the mountains.



Some Leica shots of locales in and around the Caribbean Sea. Note the pretty Carib mother and baby. The picture at lower right was shot during a five days' gale off Cape Hatteras. Note the stack of the tanker over behind the big waves.

to every guide and boatman of the town. Waving red flags before bulls is much safer. Let them spot you as a tourist and the voluble army of guide will all but carry you where you wish to go—or don't wish to go. We soon learned to carry our Leica in the pocket. A surrounding mob of shouting guides and hucksters is poor atmosphere for the amateur photographer. If one wishes to obtain character studies without the subject's knowledge that he is being photographed, a small, inconspicuous camera is almost indispensable. Our little Leica we found particularly suited to this type of work.

When we were in port we often had to devote our nights to film development. After our one experience in which carelessness about the temperature of the developing and fixing baths pitted our negatives, we were very careful to keep all solutions at 65° F. The boat had no refrigeration system and, of course, our tank water was the temperature of the sea water—approximately 85° F. We had to go ashore and get ice for each development, although at Grenada we hired two little ragged negroes to get ice for us. Almost every day different couples of equally ragged children would row out to say, "Need any more ice, mister? We're the boys who got ice for you the other day." They knew we couldn't tell them apart!

As we tramped the steep wooded hills of Grenada and St. Lucia and the other charming islands of the Windward and Leeward group, we learned that the camera itself is a great aid to one's appreciation of beauty. Intent upon returning with good pictures, we found ourselves growing more alert to beauty of composition, of line and form. Sometimes we found it in the innumerable old forts dotting the West Indian hills, sometimes in the patterns of cane fields on the slopes of green mountains, and sometimes in the barren streaks of lava sloping down the side of Mt. Soufrière on the Island of St. Vincent or the rugged shoulders of Mt. Pelée of Martinique.

Bergie and I set out for our four-day hike leaving my wife under the competent guardianship of a husky young negress. The trail was narrow and precipitous. Occasionally we would pass groups of natives, heads laden with heavy loads of bananas, yams, or great sheets of corrugated iron for their homes. What a paradise for the picture hunter here. Distant mountains with a foreground of banana tree leaves; a coal-black boy with a white-toothed smile, bearing on his head a kerosene tin full of flying fish; a strong, short-skirted colored girl standing in the rain, her heavy basket protected by two huge green leaves which she had plucked from the verdant roadside; a little child on his knees, drinking the cool water which trickled down the rocky walls to be shot out into an available stream by a bit of bamboo. Our Leica found little rest these days.

After spending the night at an ancient sugar estate we started on the last lap to the Carib quarter. As we tramped along the narrow rocky path we began to notice the difference in the features of those natives who passed us. The purely negroid type seemed to be giving way to the Mongolian type. The men and women now had squint eyes, high cheek-bones, and long, straight black hair. More frequently than not, they could not speak English. Once we stopped before a grass hut to ask the mother of two naked babies crawling about the house if we might photograph them. She spoke no English and we soon discovered that she did not know what the camera was for.

That night we slept on the floor of the cabin of Jolly John, Carib chief, recently deposed ("fired" would be a better word) for permitting his tribesmen to smuggle rum. The Caribs were interested in two things about us—my zipper shirt and the camera. One day Jolly John informed us that a woman had come to have her picture made. Outside stood a large Carib woman with

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SMALL-FILM-IANA

Part II

THE AMATEUR FILM AS AN ART MEDIUM

By WALTER BLUEMEL

Chief of Workshop Dept. of Cinematography, University of Southern California



Like the lack of color, and even the lack of sound, the lack of the third dimension is not particularly felt, for the imagination takes care of this deficiency. When a person watching a motion picture sees one object larger than another when he knows they should be the same size, or when he sees the curbs of a straight street converging when he knows they should be parallel, his mind transforms this distortion into terms of perspective, knowing subconsciously that the difference in size and the converging lines are due to a two dimensional representation of a three dimensional scene. The mind, therefore, corrects the two dimensional picture into the third dimension. Actually, the eye sees perspective in much the same way as the camera (with the addition of the third dimensional effect produced because each eye sees objects from a slightly different angle), that is, distant objects seem smaller than close ones of the same size, but experience has taught the mind to compensate for distance, and the two objects are seen to be the same size. In pictures, the eye attributes the difference of size of objects which it knows should be the same size to the distance between them, even though distance does not actually exist on the screen, and hence the illusion of depth is created.

That the lack of third dimension is an advantage rather than a handicap is not at first evident, but without it many valuable illusions in pictures would not be possible. The use of miniatures and glass shots, for instance, is possible only because the camera records near objects larger than distant ones. Much of the process and special effect photography used in professional pictures likewise is possible only because of the lack of the third dimension, but as this does not particularly concern the amateur I will not go into that. What the amateur is concerned with, however, is how to increase the illusion of depth and how to use the limitation to the best advantage.

Lighting is the most effective tool in creating the illusion of roundness and depth in motion pictures. Almost any modern photoplay contains numerous examples of depth lighting, and, as I suggested last month, the amateur would do well to study how the effect is obtained. The lighting in Hollywood-made pictures is in many instances unnatural, but it does not impress one as such, for the effect is pleasing and approaches more nearly art than if the lighting were 100% natural. The cinema artist actually paints with light, using it not merely to make his subject visible, but also to effect depth, to make up for lack of color, to build up composition, and to create the desired mood. Not only does he use light, but also shadow, for shadow is just as important as light, especially in creating the illusion of roundness and depth, and for contrast. Keeping the foreground in shadow and highlighting the background is very effective for producing depth, as is also the alternate distribution of light and shade in various planes of the picture, and the use of backlighting. Lighting is really an art in itself, and requires considerable study.

As with the other limitations, the limitation in screen

size is really an advantage to the cinematic artist. It is not natural to see everything in a confined area as on a 3x4 screen, for the eyes are practically unlimited in their field of vision because of their mobility and that of the head. Although a person can look in only one direction at a time, the movement of the eyes and head is so easy and unconscious that he can perceive everything around him in a second's time. Thus, when he is looking at one thing, he is still conscious of what is all around him, and he sees what he is looking at in its relation to its surroundings. Not so with the camera, however. It is conscious only of what it is pointed at, and everything out of the picture area might just as well not be there. It is left to the imagination of the audience viewing the picture what is beyond the edges of the screen, which is in itself an advantage. The absence of space orientation due to the limited size of the screen permits the photographer to show what he wishes without its being effected by undesirable surroundings (they being inserted by the imagination of the audience), and the creation of an illusion of reality is thus possible. Should it be necessary, on the other hand, to show these surroundings, it can easily be done by panning the camera, or inserting a separate shot, or by means of a trucking shot, thus producing an effect much like in real life. Because of the absence of space orientation it is possible to go even further than this and make two widely separate places seem to be adjacent simply by cutting from one place to the other and continuing in the second action in the first (continuity). Because there was no lapse of time and the audience cannot orient itself between scenes, the illusion of their being adjacent both in time and location is complete. It is easy to see, therefore, where the limitation in the size of the screen and the fact that within this limited area the cinematographer can include or omit (compose) whatever he wishes, and jump from one place to another with the audience (necessarily) being conscious of it, is of considerable advantage.

Another peculiarity of the motion pictures results from the fact that the screen is vertical and the audience has no way of knowing that the picture on the screen was not photographed from a vertical position. Common sense, however, tells everyone that a street lies horizontally, even though it may run up and down on the screen, and that a man is vertical when walking even though he may be photographed from above and appear to be horizontal. If a shot is taken of a tall building from below it appears to be leaning over backward, almost in a horizontal position, but the spectator knows this is not the case. However, if the building could be laid on its side and photographed, it would still appear to be vertical, though it is actually horizontal. This is due to the fact that the camera cannot transfer the sense of gravity to the spectator, and his only guiding sense in connection with the picture on the screen is that of sight. Since the picture is projected on a vertical surface he cannot tell what angle the camera assumed in

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THE UNIVERSITY IN MOTION PICTURE PRODUCTION

By RICHARD L. BARE,
Supervising Director and Cinematographer

[Editor's Note: The Department of Cinematography of the University of Southern California has for the last five months been engaged in the production of a motion picture version of Edgar Allen Poe's story, "The Oval Portrait." It is an entirely student-made production, under the faculty-guidance of Dr. Boris V. Morkovin, Instructor of Cinematography.]



HIS article is written in the interest of perhaps saving some other professionally-minded amateurs, like myself, from many disheartening hours of discouragement when and while making a serious motion picture drama.

There are pages and pages of "do's and dont's for amateurs" continually being written by those who know, yet the majority of amateurs go right on making ferocious cine film. Almost every time we pick up a trade journal, or turn to the amateur section of a picture magazine, we are bluntly confronted with such oft-heard phrases as "don't pan too quickly", or "be sure to use a tripod", or some other equally fundamental rule regarding the proper use of the cine camera.

But these cautioning writers of the "do's and dont's" columns, only transport their knowledge insofar as purely technical points are concerned; that is, usually. Lenses, filters, lighting and maybe an idea or two on trick work are usually the constituents of a general amateur movie article. These are all very necessary to the camera-owner who wants to put an image on his film, but the equally important information regarding the making of an amateur motion picture, such as organization, administration and the necessary details which must be executed before an amateur drama can be made, are sadly neglected.

Perhaps the best known authorities on how to produce an amateur movie are those who have produced amateur movies. At any rate, they are well qualified to tell of their experiences so that other ambitious movie makers can either profit or lose by said experiences. What has happened in amateur picture making is a good criterion for what is right or wrong.

For the dyed-in-the-wool aspirant who thinks in terms of professional cinema art and whose bits of camera work show that, this article is written, for, I think that the epitome of the amateur's success lies in the fact that he has at last created a motion picture of professional quality.

In the first place, when the amateur makes up his mind that he must have a vent for his aesthetic intellect (in other words, decides to make a movie) he almost invariably chooses something that either means absolutely nothing in the way of worth while cinematics, or else he decides to produce a story so difficult and "arty" that many professionals wouldn't attempt doing it.

Whether we of the Department of Cinematography at the University of Southern California fall into the former category, remains to be seen. At any rate, we chose "The Oval Portrait," one of Edgar Allen Poe's lesser known novels. The reason this was selected is not exactly known, unless it was because the story in itself more or less contained an unfinished thought. Poe leaves you wondering why he ever wrote such a story. This was just what we wanted because the original would therefore be flexible and easily adaptable to whatever thought we desired to express in our motion picture dramatization.

Briefly, the original story, in typical Poe style, describes the arrival to the old darkened chateau, on a stormy evening, of the stranger and his valet. Amidst

thunder and lightning and a downpour of rain, the two somber figures take refuge for the night in one of the remote rooms of the chateau. Here the stranger prepares for bed, but before this, discovers a small, black book which describes the history and importance of the various paintings hanging around the room. Reading this book in bed, the stranger, after several hours of intense interest in the paintings and their descriptions in the book, realizes that the candelabra by which he is reading, is not in the most advantageous position. He extends his arm to pull it closer to him, and as this is done, the light protrudes on to a portion of the wall hitherto unnoticed. When the stranger's eyes meet the oval portrait hanging in this heretofore darkened spot, he is completely hypnotized by it, and raising up into a half reclining position, stares for hours, strangely entranced. When later he suddenly comes to his senses and falls back on to his pillow, his thoughts turn to the book and to what it might have to say about this mysterious oval portrait. Then reading from the pages we see the rest of the story in retrospect. There is a painter who falls in love with the maiden and marries her. He then desires to make her immortal upon canvas and so she poses for him. Day in and day out she poses and he paints. His neglect of her is described; he loves his bride, but not as she is upon the stand, but as she is upon the canvas. She suffers untold agonies through his neglect and enthusiasm for his work. The room is cold and barren; winter passes and still he eagerly paints on. Finally the last touch is applied and the painter, in great jubilation throws back his paints and pallet and exclaims in a loud voice, "It's life itself!" Then for the first time in days he turns to regard his bride—to behold her figure on the floor, dead.

This is where Poe leaves you. Whatever connection there has been between the old man in the bedroom and the tragic figure described in the little black book, one must imagine. And so we did. We left the beginning almost identical with the exception of changing the valet into a chauffeur, and the time of the story from the nineties to around 1920. We used the chauffeur to create a mysterious mood right from the very beginning, preparing the audience for the mood of the story. When we dissolve out from the pages of the book and go into the root of the story seen in retrospect, here is where our scenario department took the stand. But to make Poe's nucleus, or rather the unfinished thought, as I insist upon calling it, into a story which is perfectly and sanely congruous, a definite tie-up must be made between the old man in the chateau, and the painter and his bride.

This was done by what we termed the "key situation." Simply and logically, the girl gives her painter-lover a small cross, which she tells him is a token of her love, and that he should wear it forever. Then we proceed, with the arrival of a bulletin-announcement telling the painter that a scholarship to the Paris Art Academy will be presented to the artist-creator of the most perfect conception of feminine charm and beauty.

This is the painter's incentive to create his masterpiece. Then the contrast between the beautiful girl on the posing stand and the rough outline on the canvas, through to the near-finished masterpiece in paints and the slowly withering human form nearby, is emphasized. The climax comes when the painting is completed, and the tragic contrast between the portrait which is "life itself" and the dead figure of the girl on the floor. Then back to the chateau we go where we find the old man finishing the narrative. He gazes at the oval portrait hanging on the wall, his eyes now dimmed with tears. His hand slowly raises to a chain around his neck and we discover (if we haven't already guessed it) that the cross at the end of the chain is the same one that years ago was given to the painter by the maiden. Here our story is done, and to finish, still in the Poe mood of story telling, our camera leaves the stranger in bed and travels to the windows where "outside the storm rages on."

To produce a story like this, simple as the idea is, would be quite out of the question for the majority of amateurs unless they received the co-operation we did. This picture had to have the touch of professionalism or it could never have been satisfactorily done by amateurs. A studio to work in was vitally necessary and if Metro-Goldwyn-Mayer Studios had not graciously allowed us to shoot on two of their stages, "The Oval Portrait" would still be a myth, as it was over two years ago when I submitted my adaptation of it to a northern amateur movie club for production. It was rejected due to the fact that it was much too difficult, and could never in the world be made with the talent and facilities of the northern club. So, "The Oval Portrait" was pigeon-holed for the time being.

But when I entered the University of Southern California and majored in Cinematography, I slowly but definitely became aware of the advantages and facilities which the University could offer an amateur production organization. Here was assembled and studying (out of books, however) a group of picture enthusiasts eager to gain experience on actual production. Here was a University with perhaps the only real separate department of cinematography in the world. Here was Los Angeles, the heart of the motion picture industry. Here, and only here, could be made a motion picture drama, purely amateur, yet with professional facilities.

Perhaps the most important function of the amateur production company is organization. Unless the would-be directors, cameramen and actors are brought together co-ordinately and in harmony, a picture will never result, and if started probably will never be finished, rather dying the death of so many amateur movies, that of disagreement and lack of administration.

In our case, the first thing we did was to assemble a staff of competent workers, who didn't feel as if their services were rendered as a favor to someone. We tacked a chart on the wall in our "office," which outlined the departments under which persons worked. The executive department, with the supervising director as head, had direct control over three sub-departments, the camera, technical and directional departments. Emerging from these three were the individual positions of all the co-workers on the picture. For instance, the head of the camera department had control over the electricians, assistant cameramen and still photographers. The technical department head had direct supervision over the script clerk, assistant directors, property man, technical director, research director, art director and publicity director. The directorial department had under it the cast, the film editor and the musical scoring director. In this manner was the organization of "The Oval Portrait" prescribed.

Casting was difficult. Many weeks were spent in searching two campuses for a leading woman. Screen

tests were taken of three debutantes, but none filled our critical requirements of "sweet maidenly beauty," yet possessing true acting ability. The one finally selected for the part was neither tested nor recommended, but was instantly decided upon as being the one and only type.

Foot after foot of celluloid may be wasted in screen tests for those applicants who are doubtful, but when



Richard L. Bare, Supervising Director and Chief Cinematographer, Dept. of Cinematography, University of Southern California.

the right person for the part comes along, his or her fitness is sensed and screen tests wouldn't tell you more emphatically.

Inasmuch as we are undertaking the production of a period costume drama (French, 1880) considerable research was necessary. This duty was entrusted to a student better qualified than any of the others, as she had traveled all over that section of Europe and could advise us accordingly. Information regarding the authenticity of costumes and styles was dug up efficiently and promptly upon some such demand as "What does an 1880 French postman look like?" or "Does it snow in France?" The job of research director is probably the most thankless of all, because if you are correct in every detail your work is not noticed, but the minute you slip up on some minute point, you may never hear the last of it.

One way to insure a better picture, whether amateur or professional, is to shoot a lot of film. The more waste on the cutting room floor, the better the film on the reels. We had lots of waste on the cutting room floor, if that means anything in our case. Over 8500 feet of negative were shot for a picture originally intended to be a single reeler. But as the shooting progressed and the enthusiasm became more intense, it was decided that to justly tell such a story cinematically, the picture should be at least two reels in length. Well, when the first cut was ready, with titles, inserts, etc., all in, it was found to be complete in four reels, not counting several sequences scratched out of the script. The story was there, but when told in this length it lagged quite obviously, so it went back to the cutting room for more trimming. Unnecessary sequences to the plot of the story were temporarily stricken, while all the scenes in general were cut a little closer in order to quicken the tempo. Tempo is the most important thing in cutting, and vested in the realm of this little art, is the success or defeat of your picture.

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MINIATURE CAMERA PHOTOGRAPHY

FILTER TALK: With summer and the much thought-of vacation almost upon us, a check-up of accessories to add to the equipment should be taken, notably filters. Miniature camera users represent the advanced type of amateur photographer, and it is safe to say that at least 90 per cent of baby camera owners possess one or more filters. The necessity of the filter for successfully recording certain subjects is well recognized by photographers, but it is taken in a matter-of-fact way. They employ yellow filters to compensate for the extreme blue sensitivity of the film they are using, enabling blue skies, sea scenes, etc., to be photographed in a successful manner. A clear understanding of the manner in which the filter functions, or the correct use of filters of different color, or density, is lacking.

The usual yellow filter is quite prevalent amongst miniature owners' equipment, but few photographers will be found to have a series of yellow filters of different densities, or perhaps the new green filters, or such filters as the 23-A, 29-F, or 72-Gamma, etc.

As its name implies the filter allows certain wavelengths (colors) of light to enter the lens while retarding others, in this manner compensating for the unbalanced sensitivity of the emulsion being used, except in cases where special effect filters are employed, which produce exaggerated results. The filter holds back a certain percentage of the actinic light necessitating a longer exposure in order to correctly expose the film, hence the filter factor. The deeper the color of the filter the more light it holds back, and the greater is the filter factor. The latter is also dependent upon the color sensitivity of the emulsion. The more sensitivity the film possesses to the color of light the filter admits into the lens, the shorter will be the required augmentation of the exposure.

In order to easily understand the action of the filter it is advisable to refer to the three primary colors of light—red, green and blue-violet. Yellow light is a combination of red and green light. The filter allows the light of its own color to enter the lens and retards the other colors. If we slip a yellow filter over the lens it will allow red and green light to pass through it, since these are the components of yellow, and it will retard a portion of the blue-violet light according to the density of the filter. Thus a K1 filter cuts off only a portion of blue and violet light, whereas the denser K2 filter eliminates all violet light, and a large portion of blue light.

Now let us assume we employ a red filter, which according to light theory allows red light to pass through it, cutting off the other two primary colors of light—blue-violet and green. By referring to an actual transmission graph of a red filter, such as the F filter, we find that it eliminates all violet, blue, green and yellow light, allowing only orange and red light to pass through it. When such a filter is employed to photograph the sky the latter will appear practically black in the finished print. Normally the sky is blue in color and since blue will not pass through the F filter the sky will reproduce in the manner described. Correctly used a filter of this type produces artificial night effects.

Lately there have appeared green glass filters which are classed as being suitable for both orthochromatic and panchromatic films. In filtering for an orthochromatic

By

AUGUSTUS

WOLFMAN



emulsion we are mainly concerned in eliminating blue-violet light. The usual orthochromatic film possesses a large excess of sensitivity to blue-violet, and is also capable of recording yellow and green light to a lesser degree. The green filter cuts off the blue-violet and red light. It serves its purpose with orthochromatic films because of its elimination of blue-violet. Since ortho films are not sensitive to red the elimination of that color in this case is of no concern.

Most modern super speed panchromatic emulsions usually exhibit an excess of sensitivity to red, therefore the new green filters are suitable in this case since they eliminate a portion of red light besides blue-violet.

Green glass filters also represent an improvement over the yellow glass filters commonly employed. To understand this point let us digress for a moment to consider briefly the manufacture of filters.

The first type of filter to be commonly used was made by cementing a piece of dyed gelatine between two pieces of glass. Even though perfectly plane parallel pieces of glass were chosen strains were set up by the cement, and the result was that the finished filter was far from being plane and parallel, which is naturally productive of unsharp results. Such defects were overcome only when glasses of unusual thickness were used, as in the case of the Wratten A filters.

The precision necessary in miniature photography obviates the use of poorly made cemented gelatine filters, with the result that yellow filters made from optical glass colored yellow in the melt appeared on the market. In this way good plane parallel filters could be produced by the careful grinding of the glass. However, yellow pot glass filters present a specific disadvantage. Dr. Phil H. M. Kellner in an article in the September, 1933, "American Photography," clearly explains the advantage of green glass filters. Much of the following information is obtained from that article.

Yellow glass filters are made from cadmium sulphide glass which is a so-called colloid glass, and there are therefore variations in the quality and density of the color, since it is not so dependent upon the quantity of cadmium sulphide which is added to the glass, as on the temperature used in making the glass. In the same melt may therefore appear parts which are yellow and strongly absorbent, and parts which are brownish and do not absorb as well as the yellow parts. If the filters are not inspected such variations will appear in them.

Because of the variation of the density of the color it is practically impossible to produce a series of filters of equal density, necessitating the setting up of a wide tolerance for each grade of density. Thus it may happen when purchasing two yellow glass filters of different density, that the designated lighter one will approach the upper limit of tolerance, whereas the designated darker one will be at the lower limit of tolerance. In

such a case the difference in the effects produced by both filters may be negligible.

The idea was then hit upon to substitute green glass filters for the usual yellow glass filter. Green glass is made from a so-called true solution glass, which unlike yellow cadmium glass is homogeneous in evenness of color. The glass can be given perfect optical treatment as in the case of yellow filters, and we also have the decided additional advantage of the even distribution of the coloring matter.

The density of the filter can also be varied by the difference in thickness of the finished filter. Thus with a given melt of glass different filters may be simply prepared by varying the thickness of the glass.

Now to return to the discussion of filters in general. If the photographer is to have but one or two filters he can obtain them in slip on mounts. Such filters are ordered in sizes according to the diameter of the lens mount. They are supplied in fixed mounts which slip over the front of the lens. Some of us more interested in the art of filtering may be contemplating the acquisition of a set of filters. Such a set may be purchased complete at one time, or the filters can be acquired singly over a period of time until the desired set is complete. In this case it is advisable to choose a definite size in which all the filters purchased will be such as the 31-32 mm. round glass filters, or two inch square filters, etc. A filter holder, or one of the newly introduced combined sunshades and filter holders accommodating the size of filter chosen, is obtained. The various filters can now be acquired in one definite size to accommodate a single holder, making for greater compactness and portability.

Photographers choosing a size such as the two inch square filter, can avail themselves of the varied filters employed by the motion picture industry. I am including below a partial list of such filters and the general purpose for which they are used to enlighten the photographer in making his choice:

K-1 (Yellow)—For moderate correction.

K-2 (Yellow)—For medium correction.

Aero No. 1 and No. 2—For aerial work and landscapes.

G. (Orange)—For full correction.

23-A (Red)—For over-correction and night effects.

25-A (Red)—For greater over-correction and night effects.

29-F (Red)—For extreme over-correction and night effects on regular panchromatic film.

72 ("Gamma")—For night effects on supersensitive film.

56 (Green)—To reduce contrast.

Fog Filters—For producing artificial fog effects.

Besides these there are also a large number of graduated filters such as the Scheibe graduated filters, available in the two inch square size. The graduated filter enables the sky and foreground to be rendered in a different manner. The simplest one of this type is that in which the upper half of the filter is yellow, and the lower half composed of colorless optical glass, the yellow half blending into the colorless portion at the center of the filter. In using these filters they are adjusted so that the sky is photographed through the yellow portion whereas the foreground is recorded through the clear half. Normally, when exposing for the foreground the sky will be found to have been over-exposed, due to the vast amount of actinic light it contains, in comparison to that reflected from the objects in the foreground. When using the graduated filter the upper yellow half will correct the unevenness in exposure and improve the tonal reproduction of the sky.

There are also more advanced graduated filters available such as those in which the upper half is either red

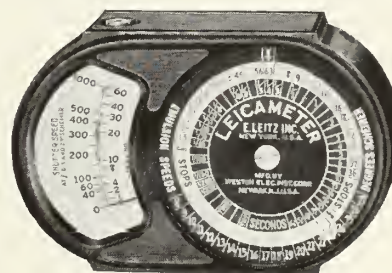
or orange, thereby producing darker skies. Some have the lower half yellow instead of being clear, and the upper half red or orange, enabling one to obtain correction for the foreground, and at the same time over-correct the sky.

Question will arise as to the X1 and X2 green filters. This set is designed primarily for use with Eastman Supersensitive Panchromatic film in both daylight and artificial light.

Too Much Contrast: Many photographers get too contrasty results with the film and developing formula they are using. Such films as the DuPont Micropan and Perutz Persenso are prone to produce excessive contrast when employed for the making of ordinary run of photographs. In copy work or photomicrography strong contrast would be desirable, but this is not the case in pictorial, or similar photographs.

The simplest means of controlling contrast is to shorten the developing time. If the instructions of your chosen developing formula prescribe 20 minutes at a definite temperature, reduce the developing time to about 15 minutes, and you will find the resulting negative to be less contrasty. The modification in the developing time will naturally be dictated by the amount of contrast desired.

Contrast increases as the development of the film is prolonged. Incidentally, the decrease in the development time will also favor a finer grain. As development proceeds density increases, and it has been proven that if a print of constant density is made from negatives of increasing density, the graininess in the print increases as the density of the negative increases. The shorter development will produce a negative of lower density.



The New Weston Leicameter

New Weston Leicameter: This Leicameter now appears in a new form similar to the regular Weston Electric Meter. When pointed at the scene the meter indicates the proper shutter setting for Superpan film at $f:6.3$ or Plenachrome film at $f:4.5$. A guide is attached with which the meter shutter speed rating can be quickly converted to the proper exposure necessary for films whose speed differs from those mentioned.

The meter incorporates the well known Weston Photo-electric cell, which converts the light reflected from the object into electrical energy, obviating the use of batteries. It is a very compact and handsome instrument and will no doubt be very well received.

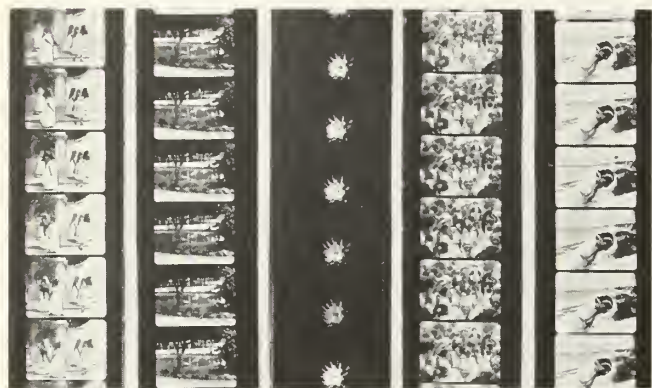
Use Lens Hoods: Despite the fact that many new lens hoods of accurate design have appeared lately, such as the Hollywood combined sunshade and filter holder, the Solite, the Counter Light Cap distributed by Hugo Meyer, etc., many miniature camera users still persist in photographing without the use of a lens hood.

The lens hood deserves to be classed as a necessity rather than an accessory to be employed occasionally, especially when consideration is taken of the greater use today of speed lenses. When used without a hood the lens will pick up a large quantity of extraneous light, resulting in a negative which appears flat, and is lacking in brilliance. The faster the lens the larger is its aperture, and it will be more apt to pick up stray light.

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THE STEADMAN MEASUREMENTS IN MOTION PICTURE EXPOSURES

By F. MORRIS STEADMAN



(1) The Mestizo of Yucatan, Mexico. (2) Flamingoes. (3) The Night Blooming Cactus. (A time exposure by electric light every minute or two as it opened in the night. (4) The Kiddies Carnival. (5) Along the Beach.



HE measurements here referred to are for measuring:

Film Speed. (In seconds of time.)

Subject brightness. (In Actinos.)

Working value of lens stops. (In Steads of solid angle.)

To review briefly the truths that have been explained carefully in former articles appearing in the *International Photographer*:

The speed of a film is the exposure which it requires to secure a normal chemical effect when the brightness of the subject before the lens is one Actino and when the one Stead stop is used in the lens in taking the picture. This speed is 32, 64, 128 or 256 seconds for films now used, 64 seconds being the speed of the present Plenachrome and Verachrome films.

A subject to be photographed has one Actino of photographic brightness or actinicness when the light from its high-light area, shining thru an opening, creates on a small strip of film or standard tinting medium a least visible tint, in 64 seconds, when the tinting medium rests at a distance from the opening equal to one of the diameters of the opening.

If the highlight area is bright enough to create that tint in 4 seconds, it proves to be 16 times brighter than if 64 seconds were required, and it, therefore, has 16 Actinos of intensity. Sixty-four divided by the tint time as found by a test, gives the brightness of the area in Actinos.

The one Stead lens stop is that now known as F/64. 4096 (64), divided by the square of any F/number, gives the Steads of solid angle dimension in that stop. The Steads of solid angle express the "working value" of a lens stop, just as 4 horses or 16 men express working value in a problem of labor. The F/1 light cone has 4096 Steads and the hemisphere has 8 times that value or 32768 Steads. (32M, in practice.)

All cones are fractional parts of a hemisphere, just as any angle is a fractional part of a circle and the hemisphere has 32M (read 32 thousand) Steads of solid angle just as a circle has 360 degrees of plane angle. The F/numbers are cone altitude numbers or *form* numbers while the Steads are pure *value* numbers. The following table shows the value of the different cones from the form F/64

to the full hemisphere: The cone

forms F/64 F/45 F/32 F/22 F/16 F/11 F/8 Steads of solid

angle 1 2 4 8 16 32 64 F/5.6 F/4 F/2.8 F/2 F/1.4 F/1 The full hemisphere 128 256 512 1M 2M 4M 32M (32,768) Steads

I will assume that the M. P. film has the same speed as the Plenachrome and Verachrome films, 64 seconds, which, as stated, is simply the correct exposure for those films when the one Stead stop is used and the subject measures one Actino of brightness.

The fact that the motion picture exposures are ordinarily 1/32 of a second makes it evident that, to take a one Actino subject correctly in that time, the lens stop will have to be as many times larger than 1 Stead as 1/32 of a second is shorter than 64 seconds, the speed exposure of the film. This standard motion picture exposure is about 2000 times shorter than the speed exposure, 64 seconds, therefore, the correct stop for taking a one Actino subject must have a working value of 2000 Steads. (F/1.4).

The key to the correct motion picture exposure is, therefore, this 2M Stead stop, since it is the correct stop to use when taking a one Actino subject with the regular motion picture exposure. (1/32 second). (This is a mathematical key; your lens does not require that stop.)

In exposing with the motion picture camera the brighter the subject, the smaller the stop that must be employed. We have found that stop 2M Steads must be used for a one Actino subject. Therefore, if the subject is 4 times brighter the stop must be 4 times smaller than 2M or 512 Steads. The simple rule is as follows: Divide 2M by the brightness of the subject in Actinos, as measured from the highlight area of the subject: The quotient is the Steads of solid angle to use in the lens in making the exposure.

Should there be a motion picture film twice as rapid as the 64 second speed films mentioned, then it will require only half as large a key stop to take the one Actino subject properly, or stop 1024 or 1M, which number becomes the exposure key instead of 2M. The speed of such a fast film will be 32 instead of 64 seconds as for the other films mentioned.

A practical example: The actinicness of an average sunlit exterior is 128 Actinos, when the sun is well up from the horizon. The stop to use is, therefore, 16 Steads, as found by dividing 2048 by 128.

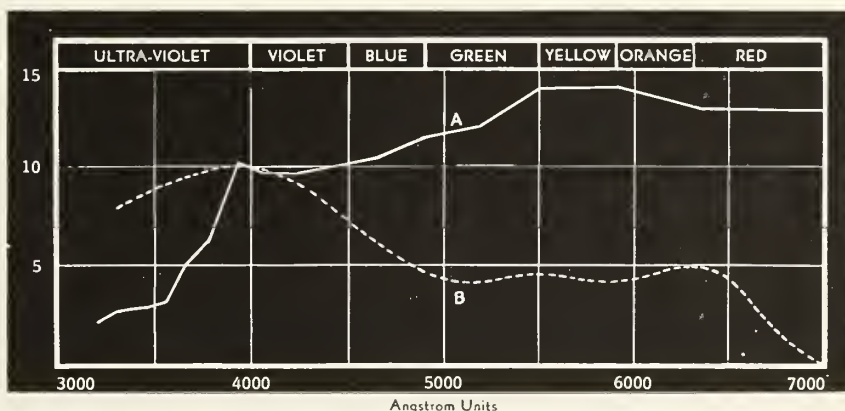
It would be impracticable and also an injustice to the present teachers in our schools to compel them to teach photography as a special extra study and craft. But it is evidently a reproach to our educational system that students must now finish their studies and still remain ignorant of the functioning of light. The right thing is to alter our basic idea of light intensity and eliminate the POINT SOURCE theory from the physics books so that the study of the basic truths of light would reveal the nature of light variations in photography, in common with all the other light conditions which we experience, thus placing photography in the hands of students in the regular course of study.

In other words: Eliminate the error of the POINT SOURCE and let the universal truths of light take their true place in the schools.

The New Studio Light

NATIONAL MOTION PICTURE STUDIO CARBONS

BALANCED LIGHT These carbons have been developed especially for the motion picture studio. The color composition of their light is accurately balanced to the color sensitivity of modern motion picture film. This is apparent from the adjacent curves. This light duplicates the photographic effects of daylight without using filters.



Curve A—Energy Distribution from the new 40 ampere Studio Carbon Arc
Curve B—Color Sensitivity of Supersensitive Panchromatic Motion Picture Film

COOL LIGHT At equal photographic intensity, the new studio carbon arc projects far less heat onto the stage than any other source of illumination used in the studio.



NEW LAMPS have been developed to use these improved studio carbons. These lamps are silent in operation. They maintain a steady arc and provide illumination of uniform intensity. Side arcs, scoops and spots are available.

TRIED and APPROVED in the STUDIO
A BETTER LIGHT
for BLACK and WHITE PHOTOGRAPHY
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MOTION PICTURE PRODUCTION IN SOUTH AMERICA

By JACK ALTON

(A Letter from Argentine to the Editor)

THE Spanish Market, as you know, is the second after the English. I believe there are about one hundred and sixty-three million Spanish-speaking people, although many of different accents, but always Spanish. During the silent era of motion pictures this market was controlled entirely by Hollywood. Here and there appeared a few pictures of German origin, or a few French comedies, but the Latins preferred the quick tempo of American cutting.

There were no so-called Spanish productions. There was no need for them, for a picture could be interpreted in various ways. A Spaniard saw it in Spanish. Then the talkies came and here the difficulties began. Subtitles, a strange language, misinterpretations, wrong translations, half of the screen covered with titles—one did not know where to look or what to listen to. And on top of all never in history has Hollywood sent out so many pictures of inferior quality. And so we arrive at the year 1933.

People in the Spanish-speaking countries are getting tired of the gaba-gaba they do not understand. Pictures are too much nationalistic. Problems, that little interest the public of South America. Managers of local exchanges of American firms beginning to complain. Box office dropped considerably. So the producers got their heads together and soon Hollywood sent out a few so-called Spanish talkies.

A well-known Spanish studio began to manufacture them like sausages. The result? Tragi-comic. Tragic for the box office and comic for the public. It so happened that the man in charge of Spanish productions in Hollywood sent out an S. O. S. for Spanish-speaking authors, actors, etc. He had no idea of the different accents; during the most serious dramatic scenes the public burst out laughing. Why? Because one of the actors would speak in Mexican and the other would answer him in a Cuban accent. Soon appears a Spanish policeman and yells out in pure Chilean accent until the final result was that the picture flopped. Or, in another production, the leading man would make love to his senorita in pure Castilian that, to the Argentinian, is something like if they would show an Englishman making love in good old Cockney accent. Wouldn't you all laugh at it in Hollywood?

Then again producers in Hollywood have little or no idea of local costumes and customs. Whenever the tango appears on the screen even in an English talkie people get a kick out of it and they love to see girls dressed up in Spanish shawls and high combs.

True, here and there some of the American companies send the inspector down here to "study" conditions. He arrives with the Pan-American Airways, for he is in an awful hurry. The reporters await his arrival and ask him how he likes the country. He looks around on the flying field and answers in Spanish, "fantastico." They get him in a car and it being a hot day, the local manager takes him to the nearby seaside resort, where the press is invited. The Mogul announces the friendship between the United States and Argentine and his next year's program. Big applause and, while others still enjoy the imported French cham-

pagne he is on his way to the flying field with the detailed report that some stenographer has, in the meantime, prepared for him. He arrives in the States and reports his "studies." The next Spanish productions are even worse.

The most phonetic of all Spanish accents and the most generally accepted in the Spanish world is the Argentine. Also the most motion picture minded of all are the Argentinians. As may be seen from the annual report of a Buenos Aires trade paper published during the season of 1933, 404 films were shown and only a small percentage of them in Spanish. Five of them were produced in the Argentine. Two of the five, the only two that can be accepted as pictures, were produced by myself. At least, technically they were O. K. and are making money. One of the other two for a local studio and the other two on my own account, even released by myself, which for a foreigner is no easy task.

When I was in Paris (at that time in the post of chief cameraman of the Paris Paramount studios) I asked the president of the company about equipment, especially about lights. He took a deep breath and with the air of a "Thinkheknows" around him, answered: "Lamps! Ha! Ha!—we have more than enough!" Imagine my embarrassment when, upon my arrival in Buenos Aires, I found the ceiling of the new studio full of reflectors of the kind they use to illuminate a tennis court at night, or a huge ballroom. I died instantly.

The other day I asked a local exhibitor his opinion about last year's Hollywood product. He took as an example "The Sign of the Cross," a De Mille production. "H'mm," said he, "very poor, empty theatres. People down here don't like artistic pictures. My customers in the neighborhood like Spanish pictures," and he mentioned a local made picture. When I heard that I almost fainted. Six times he re-booked it, a picture or rather a calamity of film strips on which the patches sound like huge guns; without a story, no sets, underexposed negatives, actors barking like dogs, something that never would have been accepted in the States as far back as 1800; the director of which would have been shot at sunrise in Soviet Russia—in other words, a crime against good taste and civilization. And this they liked.

At the same time pictures like "A Kiss Before the Mirror," "The Rebel," with its gorgeous photography, "Cavalcade," the picture that went over like a million in England; all these and others of similar quality flopped down here. They have a peculiar taste. Only ten per cent of the population have or form their own opinions; of the others I can only answer with the following incident that actually happened to me.

I asked a local yokel why he did not like a certain picture that was quite a success in Europe. "Read in the paper that it was no good," was the answer, and when he reads in the paper that a picture is good he swears it is marvelous. Building on my experience I produced my picture for the masses and not for the *ten per cent*. True, it was called everything by members of society, but in the neighborhood they are enjoying it and it makes money. After all that's what counts.

(Turn to Page 27)

IMPORTANT

to any picture

ANY picture, made on *any* film, may prove a hit. But the fact remains that the majority of the big motion picture triumphs are being filmed on Eastman Super-sensitive "Pan" Negative with gray backing. In other words, this film seems to be an important factor in any picture's chances of outstanding success. That fact is vitally important to every cameraman and producer. Eastman Kodak Co., Rochester, N. Y. (J. E. Brulatour, Inc., Distributors.)

EASTMAN *Super-sensitive*
Panchromatic Negative

As a Class of Artistic Craftsmen, the Cameramen of the Motion Picture Industry Are Considered to Be Unexcelled in Efficiency.

THE CAMERAMAN

Vol. I.

MONTHLY NEWS OF PRODUCTION

DOINGS AT COLUMBIA

By BOB TOBEY

"BLACK MOON," directed by ROY NEILL. Joe August is captain of the Light Brigade on this Neill thriller. His lieutenant is Dave Ragan, with Marcel Grand and Jack Andersen as Privates. Irving Lippman gets in the way as usual with his Dark Hazard (still camera to the uninitiated). Eddie Beruds gathers in the weird noises, Stanley Dunn knurses the knecessary knick-knacks (props, of course), and Eddie Blaisdell is grip.

This black and jungleerie tale about the hoodoos of the Voodooos pays the kudos to a grand cast including Jack Holt, the very charming Fay Wray, Dorothy Burgess and little Cora Sue Collins, who probably gets ENTIRELY eaten up by nasty vampires or something. But don't worry about it, as I haven't read the story. I COULD be wrong.

The boys have been trying to work a little black magic on the indefatigable Roy Neill, but to no avail, as he continues to work every night right up to the last gong. And that's a little tough, especially on the camera crew, what with bending over all the time to get Roy's pet shots right off the ground or shooting through holes in the roof. Ragan claims two more Neill pictures would give him a physique like an angle worm, the way he has to twist and turn for weird camera angles. But it's all fun—to look back on!

"FIRE PATROL," directed by ROSS LEDERMAN. Al Siegler has been truant from Columbia for some time, but he came back this month to handle the peepsight on this Tim McCoy scorchor. His fellow fire-fighters were Henry Freulich as operative cameraman, and Al Keller and Jim Goss as assistants. Earl Crowley grabbed the lobby displays, George Cooper dished up the microphone soup, George Rhein prandled the hops—I mean dandled the cops, er, coddled the hams—oh, there I go again. You know what I mean. He wasn't the head grip, because Al Becker was.

Those out among the flames were Tim McCoy, Evelyn Knapp, and Ward Bond. Tim played the man in the red tin helmet and ran in at the crucial moment to save Evelyn from a fate worse than death with a dash of arson thrown in. I was around when Ross Lederman started his big fire scenes and believe me they were the real McCoy. Heigh-ho! Al Keller says it got so hot by his camera that he was expecting the focus-changing device to melt in his hand.

SPECIAL CAMERAGRAM NEWS FLASH— Henry Freulich finally gets Big Break. Columbia has long had an eye on Henry as good timber for advancement and this month George Seid assigned him a comedy short as his initial adventure as chief cinematographer. The picture is "GET ALONG LITTLE HUBBY," directed by Ray McCarey and supervised by Jules White. This is a real promotion picture—it is Jules White's initial effort as supervisor, Columbia having just moved him up from a director's berth. Freulich has with him Jack Thompson as operative cameraman and Al Keller and Jim Goss take care of the assisting. Irving Lippman transfers his Dark Hazard to this picture; Homer Planetett puts forth his best artistic efforts as gaffer to help put Freulich across; George Cooper (that blonde menace gets in everywhere) twiddles the dials; Tommy Flood carries the torch (assistant director) and Frank Foster handles the props.

Walter Catlett heads the cast of the picture and I think Catlett is stellar comedy material. He bounds around in a series of white sets that are giving Freulich a headache as regards photography, but George Seid says white sets are a great saving on developer—you just have to wave the film over it.

Everyone is rooting for Henry and I'm predicting he will be eminently successful, because he is a conscientious worker as well as a real artist.

"WHOM THE GODS DESTROY," directed by WALTER LANG. Ben Kline is peering through the blue glass—am I ashamed; I mean the pan glass—at this one. F. M. Browne, Fred Dawson and Jack Russell give him their customary able support. Bill Fraker makes some of his 8x10 paintings-in-light for the picture, Dave Selman has returned to the lot as assistant director, by which all are greatly pleased, and Jerry Franklin also returns as script girl after an absence of well over a year. Must be Old Home Week. Walter Meins lends his brawn and Lambert Day is Big-Ears, the mixer. I couldn't find any gaffer on the picture, but Howard Robertson tells me he holds the position of chief illuminating technician. I still don't see how a cameraman can get along without a gaffer.

In the cast are Walter Connolly, Robert Young, Doris Kenyon, Rollo Lloyd and a new child actor by the name of Scotty Beckett. Little Scotty

R-K-O

"COCKEYED CAVALIERS." Authors, Edward Kaufman and Ben Holmes; screenplay by Ralph Spense; director, Mark Sandrich; assistant, Argyle Nelson; first cameraman, David Abel; operative cameraman, Harry Wild; assistant, Charles Straumer; stills, Gaston Longet.

Cast: Wheeler and Woolsey, Thelma Todd, Dorothy Lee, Robert Greig.

"MURDER ON THE BLACKBOARD." Author, Stuart Palmer; director, George Archainbaud; first cameraman, Nick Musuraca; operative cameraman, Frank Redman; assistant, Willard Booth; stills, Ollie Sigurdson.

Cast: Edna May Oliver, James Gleason, Bruce Cabot, Gertrude Michael, Regis Toomey, Edgar Kennedy, Tully Marshall.

"SOUR GRAPES." Associate producer, Myles Connolly; author, Vincent Lawrence; screenplay by Ernest Pascal; director, Worthington Minor; first cameraman, Roy Hunt; operative cameraman, Eddie Pyle; assistant, James Daly; stills, Robert Cohn.

Cast: Diana Wynyard, Clive Brook, Bruce Cabot, Ada Cavell, Steffi Duna.

"VERGIE WINTERS." Producer, Pandro S. Berman; author, Louis Bromfield; screenplay by Jane Murnin; director, Alfred Santell; first cameraman, Lucien Andriot; operative cameraman, Pierre Mols; assistant, Kay Norton; stills, John Miehle.

Cast: Ann Harding, John Boles, Helen Vinson, Betty Furness, Molly O'Day, Creighton Chaney, Sara Haden.

"OF HUMAN BONDAGE." Screenplay by Lester Cohen; director, John Cromwell; assistant, Dewey Starkey; first cameraman, Henry Gerard; operative cameraman, Robert De Grasse; assistant, George Diskant; stills, Alexander Kahle; recording engineer, Clem Portman.

Cast: Leslie Howard, Bette Davis, Reginald Denny, Alan Hale, Reginald Sheffield.

MACK SENNETT

"FIGHTING TO LIVE." Producer, Sol Leshner; author and screenplay by Bob Ives; director, Ed. Kline; assistant, Doc Joss; first cameraman, Frank B. Good; assistant, Leo Hughes; stills, Warner Bill Crosby; recording engineer, Harry Bellos; chief grip, Ray Bouc.

Cast: Marion Schilling, Gaylord Pendleton, Edie Phillips, Reb Russell.

nearly disrupted the smooth flow of the picture the other day by finding on the set and totally consuming a whole box of ex-lax. The staff was a little anxious as Scotty was in every scene the next day, but he weathered the situation perfectly, to the disappointment of those who were hoping for a day off. Heigh-ho, another treasured theory exploded.

Brownie is still struggling to lift the mortgage off the old Leica. Dawson and Russell are still struggling to lift the Leica. Ben Kline is having his troubles too. He has a lot of trick shots coming up later in the picture where he'll have to just about run the camera forwards, backwards, and sideways all at the same time to accomplish the illusion that is wanted. Notice all the gray hairs next time you see him. But I've seen Benny weather tougher ones than that, so be smart and don't send flowers prematurely.

"ONE NIGHT OF LOVE." If you want to find out about Joe Walker and his crew you'll have to refer to my column in last month's INTERNATIONAL PHOTOGRAPHER. They are still working on "ONE NIGHT OF LOVE," the musical directed by Victor Schertzinger and starring Grace Moore with Lyle Talbot. The final scenes are being shot as I write this. Miss Moore is so enthusiastic over Joe's photography that she recently presented him with one of the most beautiful electric clocks I have ever seen. Now Joe will have more time between pictures. Catch on? Ouch!

The entire crew received presents of appreciation from the star. But these were not needed to win their respect and admiration, for she had it already by reason of her lovely voice, her sincere efforts and her charming personality.

The complete proscenium and part of the wings and seating plan of the Metropolitan Opera House in New York were duplicated by the Art Department for use in the picture. They occupied the whole of Columbia's largest stage. Joe has been receiving compliments on the beautiful lighting effects he obtained in such a tremendous set. But Columbia is going to have to stop making these long-schedule pictures. I run out of copy.

MOVIE



Us kids is makin' pictur
There's Me an' Sam,
an' Dot.

'Sides a leadin' actor, ara
We got a cowboy diked ch
Sam Simpkins is our carry
I holler through my mepho
We got Doug Fairbank sk
ford, too,

Dave Griffith isn't there tall
Most kids' actin's kind, pun
But when they do jest I
Yeh act best when theis m
Yeh oughto see'm put d
But actors is tem-per-m-ta
Each holler'd for his favte
Some wanted th' "Cover W
Yeh couldn't hardly heayow
made,

So I called'm down wi my
they's at.

An' I was a he-director AN
Dad says I'm full of eg. Sa
But I'm strong for mak p

MISCELLANEOUS

Ray Fernstrom packed a Technicolor camera under his arm and on April 14 left for Europe. His destination is Holland, where he will photograph a travelog for Fitzpatrick. Lycka pa run, Ray!

Ray Rennahan is in charge of camerastor Technicolor at Warner Brothers First National Studios, where a series of shorts is in production. Associated with Mr. Rennahan is Willford C.

Phil Tannura, one of THE cameramen of Hollywood, is in Hollywood for a stay of several weeks. Welcome home, Phil. We hope you won't be appointed in our village.

Charles Rosher has been receiving quite a few bouquets from the critics for his work in the Twentieth Century production, "Firebrand."

So many cameramen have turned nautical during the past three or four years that the Cinematographers' fleet at Los Angeles Harbor is as large as the Swiss and Abyssinian navies combined. Nearly all the boats are seaworthy and should afford ample protection to the West while our war fleet is in the Atlantic.

Harry A. Mimura, our talented young Japanese assistant, has gone to Nippon for a prolonged sojourn. While there he will be engaged in live production work. Mrs. Mimura accompanies him.

Dan Clarke, who has been in Hawaii cinematographing for M-G-M, is expected to return soon.

Len Powers is assisting Eddie Tanaka of

MAKING



our barn-yard lot.
Sue, Hair-lipped Tim
too,
we got a dandy zoo.
isam-ry is a beaut;
I'm when to shoot.
amile, and Mary Pick-
ell'm what to do.
d'rector tell'm how;
cture's sure a wow.
sve got a orchestray,
n'a' ban' b'gins to play.
elth' world they are.
th' leadin' star.
some th' "Big P'rade,"
out th' awful fuss they
apne, an' told'm where
T WAS THAT!
ot a crust,
s either that or bust.

CHICORYDON HILL.

U. LAB. OPENS

Ro Hunter, Superintendent of photography at Universal Studios, recently interviewed five hundred men and women in search of employment and announced that the Universal Laboratory would again open its doors.

With the aid of his assistant Claude Baldrige, each individual applicant was interviewed personally to determine his experience in this type of work. Out of the five hundred applicants, Mr. Hunter selected fifty; the majority of these were former employees and were given first consideration.

Mr. Hunter expects to double the personnel of his department within the next few weeks. This will enlarge his staff to one hundred and fifteen men and women.

During the interviews we had men from every department apply for work in the laboratory," Mr. Hunter said. "It is impossible for me to employ men who have not had experience in this line. The work is very scientific and a man of knowledge and science is demanded to do the class of work done in a studio laboratory."

Former employees of this department have been named as heads of departments. William H. B. Smith, head chemist; Fred Feichter, chief electrical engineer; V. E. Osborne, head timer, and Wilson H. Smith, head negative developer.

Mr. Hunter, to select a number of independent cameramen to release in Nippon.

Mr. Hunter, an old friend of Mr. Powers, built his first sound studio in Japan and was for several years chief newsreeler there for the Fox Company. He also imported the first sound truck into Japan.

UNIVERSAL

"CITY PARK." A Chesterfield production. Screenplay by Karl Brown; director, Richard Thorpe; assistant, Melville Shyer; first cameraman, Andy Anderson; assistant, M. Santacrose; stills, Joseph Harris; recording engineer, L. E. Clark; assistant, F. Redd; film editor, Fred Perry; art director, Edward Jewell; chief electrician, Warren Munroe; chief grip, George Robertson; chief prop, Robert Murdock.

Cast: Sally Blane, Henry B. Walthall, Hale Hamilton, Edmund Breese, Johnny Harron, Matty Kemp.

"UNCERTAIN LADY." Adaptation by Martin Brown and Daniel Evans; screenplay by George O'Neill, Doris Anderson and Dan Evans; director, Karl Freund; assistant, Joe McDonough; first cameraman, Charles Stumar; stills, Fred Levy.

Cast: Edward Everett Horton, Genevieve Tobin, Paul Cavanaugh, Renee Gadd, Mary Nash.

"HALF A SINNER." Stage play by John B. Hymar and LeRoy Clemens; screenplay by Earl Snell and Clarence Marks; director, Kurt Neumann; assistant, Archie Buchanan; first cameraman, George Robinson; stills, Roman Freulich.

Cast: Berton Churchill, Joel McCrea, Sally Blane, Mickey Rooney, Russell Hopton, Theresa Maxwell Conover, Alexandria Carlisle.

"BLACK CAT." Directed by Edgar Ulmer; first cameraman, John Mescall; stills, Roman Freulich.

Cast: Karloff, Bela Lugosi, David Manners, Jacqueline Wells, Lucille Lund.

"I GIVE MY LOVE." Story by Vicki Baum; adaptation by Milton Krims; screenplay by Doris Anderson; director, Karl Freund; first cameraman, Charles Stumar.

Cast: Wynne Gibson, Paul Lucas and Louise Lattimer.

"LOVES OF A SAILOR." Original screenplay by Dore Scharey and Lewis Foster; first cameraman, George Robinson.

Starring Chester Morris and Slim Summerville.

MONOGRAM CARR

"BLUE STEEL." Producer, Paul Malvern; author and director, R. N. Bradbury; assistant director, Glenn Cook; cameraman, Archie Stout; stills, Joe Walters; recording engineer, J. Stransky; assistant, Jerry Roberts; film editor, Carl Pierson; art director, E. R. Hickson; chief electrician, Edward L. Cox.

Cast: John Wayne, Eleanor Hunt, George Hayes, Yakima Canutt, George Cleveland, Ed Peil, Lafe McKee, George Nash.

"MAN FROM UTAH." Producer, Paul Malvern; author and screenplay by Lindsley Parsons; director, R. N. Bradbury; assistant, Glenn Cook; cameraman, Archie Stout; stills, Joe Walters; recording engineer, J. Stransky; assistant, Jerry Roberts; film editor, Carl Pierson; art director, E. R. Hickson; chief electrician, Edward L. Cox.

Cast: John Wayne, Polly Ann Young, George Hayes, Lafe McKee, Yakima Canutt, George Cleveland.

ALL ABOUT ME

And as for your noble scribe (if you will not indict me on two counts of flattery) I've been amused a little hither and some more yon. Had a lot of fun a few days ago photographing a gag with Skeets Gallagher and one of those vaudeville horses that can do jigs and handspings and other marvelous antics. No, folks, not an india-rubber pony, but two peopole under a horse's skin. I often have had occasion to reflect in my observation of human nature that there didn't really seem to be enough horses heads to go around, but this was the first horse I've ever worked with that could take himself apart and put himself together with the utmost nonchalance. He behaved most amazingly. C'mon up sometime and I'll show you the film.

Another epic in my youthful career occurred this month. At a premiere I photographed I actually saw and photographed the elusive Marlene Dietrich on one of her rare excursions into public places. I had never seen her before. Now there remains for me but the desire of Yahbut—to see Mae West. And I'll probably c'm'up and see her at the wrong time!—Bob Tobey.

PARAMOUNT

"SHE LOVES ME NOT." Director, Elliott Nugent; assistant, Ewing Scott; first cameraman, Charles Lang; operative cameraman, Robert Pit-tack; assistant, Clifford Shipser; stills, Frank Bjerring; recording engineer, Harold Lewis.

Cast: Bing Crosby, Miriam Hopkins, Kitty Carlisle, Edward Nugent, Lynne Overman, Warren Hymer, Judith Allen.

"CLEOPATRA." Screenplay by Young-Lawrence; director, Cecil B. DeMille; assistant, Cullen Tate; first cameraman, Victor Milner; operative cameraman, William Mellor and Cooper Smith; assistants, Guy Roe and Robert Rhea; stills, Ray Jones; recording engineer, Harry Lindgren.

Cast: Claudette Colbert, Warren William, Henry Wilcoxon, Ian Keith, Gertrude Michael.

"PRIVATE SCANDAL." Screenplay by John-Gollomb; director, Ralph Murphy; assistant, Raoul Pagel; first cameraman, Milton Krasner; operative cameraman, Harry Hallenberger; assistant, Irving Glassberg; recording engineer, A. W. Singley.

Cast: Phillips Holmes, Zasu Pitts, Mary Brian, Ned Sparks, Lew Cody, June Brewster.

"IT AIN'T NO SIN." Director, Leo McCarey; assistant, James Dugan; first cameraman, Karl Struss; operative cameramen, George Clemens and Hatto Tappenbeck; assistants, Fleet Southcott and Donald Sargent; stills, Don English; recording engineer, Harry Mills.

Cast: Mae West, Roger Pryor, John Mack Brown, Katherine De Mille, John Miljan, Stuart Holmes, Edward Gargan, Warren Hymer.

"DOUBLE DOOR." Director, Charles Vidor; assistant, Russ Mathews; first cameraman, Harry Fishbeck; operative cameraman, Fred Mayer; assistant, Neal Beckner; stills, Sherman Clark, recording engineer, R. G. Wisdom.

Cast: Mary Morris, Evelyn Venable, Kent Taylor, Sir Guy Standing, Anne Revere, Colin Tapley.

"THIRTY DAY PRINCESS." Screenplay by Edwin J. Mayer; director, Marion Gering; assistant, Art Jacobson; first cameraman, Leon Shamroy; operative cameraman, Daniel Fapp; assistant, Milton Bridenbecker; stills, Elwood Bredell; recording engineer, J. A. Goodrich.

Cast: Sylvia Sydney, Cary Grant, Edward Arnold, Vince Barnett.

UNITED ARTISTS

"OUR DAILY BREAD." Producer, King Vidor; original story by King Vidor; screen adaptation, Elizabeth Hill; director, King Vidor; business manager, Isadore Bernstein; production manager, Vernon Keays; assistant director, Ralph Slosser; dialogue director, Mortimer Offner; cameraman, Robert Planck; assistant cameraman, Reggie Lanning; stills, Madison Lacey; casting, Ray Hanson; technical director, Lloyd Briery; film editor, Lloyd Nessler; sound engineer, Russell Hanson.

Cast: Tom Keene, Karen Morley, John T. Qualen, Barbara Pepper, Addison Richards, Madame Boneita, Harry Holman, Harold Berquist, Marion Ballow, Alma Ferns, Lionel Baccus, Harris Gordon, Bill Engel, Frank Minor, Henry Hall, Frank Hammond, Lynton Brant, Henry Burroughs, Harry Brown, Harry Bradley, Captain Anderson, Harrison Greene, Si Clogg, Ray Spoker, Eddy Baker, Harry Barnard, Doris Kemter, Florence Enright, Harry Semels, Sidney Miller, Nelly Nichols, Alex Schumberg, Bud Ray, Bob Reeves, Ed Biel, Jack Baldwin and Three Milsfield children.

ANDRE, THE MAGICIAN

If Andre Barlatier makes any more trips to Catalina to make background shots I'm going to present him with a commodore's cap. He's practically a commuter. He does get off the ocean occasionally, though. The last time I saw him he was photographing a dozen extras in theatre seats with a black velvet drape in back of them, and said he was going to make the dozen extras look like a few hundred all unbeknownst to them. I suspect the NRA could sue him. Enzo Martinnelli assists Andre in all his feats of legerdemain which probably makes Enzo an accessory after the fact. You figure out what fact.—Boh Tohey.

NEWSREELING ON THE GOLDEN GATE BRIDGE

By WARREN M. MCGRATH, *Sound Technician*



The Newsreel men make an attack on the New Golden Gate Bridge.



Frank Vail getting a wide angle shot more than 500 feet up.

[Because of lack of space it was impossible to print all the fine shots supplied by Mr. McGrath. They will appear later with another article by this author.—Editor's Note.]



FRIENDLY sun has begun to bore big rifts in the early San Francisco fog as the broad white bulk that ferries across the Golden Gate gives its warning blast and slips silently into the enveloping mist. Aboard, a group of newsreel cameramen peer anxiously into the west where the rapidly disappearing fog is reluctantly giving up the ghostly outline of the mighty north tower for the world's largest span—the Golden Gate tower.

From here, it's 580 feet, made diminutive by fog and distance, appears ridiculously inadequate for the burdens it is to bear. This illusion is quickly lost, however, when driving around a bend in the road the enormity of its mass and height bursts upon you. Involuntarily your eyes are drawn upward where they come to rest on the tiny specks of humanity becoming increasingly visible through the thinning fog. Right there is where your author becomes aware of a frigid sensation in the region of his feet.

Getting by the gates of the construction camp is worse than crashing the well-known wrestling matches. All sorts of credentials must be shown before we are finally admitted to the main office. But once inside the comforting influence of solid walls the old backbone straightens up again—that is, it does until we are issued a funny kind of hat resembling a French trench helmet but made out of a composition material designed to be a little lighter in weight. Inside the hat is the legend, "HARD BOILED HAT," and I suspicion that they are designed to shield us from falling rivets, etc. I decide not to ask, however, lest my suspicions be confirmed.

Looking upward from the gigantic base of the structure reminds you of a modern Tower of Babel with its hundreds of workers building their structure clear up to the sky and vanishing in a whirl of fog. I rightly surmise that I will witness an object lesson in the well-known daring exhibited by these news cameramen on stories such as these. As for myself, well, I've decided that good Old Mother Earth has been a pretty good friend this far and I ought to kinder' stick by her. But maybe I spoke too soon for it becomes evident that my services are required "upstairs." In a little basket-like cage in which we are solidly squeezed, we are swiftly

raised to the highest level that it can take us, from there we make our precarious way up a spidery ladder to a sort of skeleton framework known as a "creeper truss." The creeper truss is located about forty or fifty feet from the top and is raised by a system of cables as the height of the structure is increased, thus affording workers a maximum of safety. Safety, did I say? Maybe so, but it sure seems a long way down.

Local angles completed on the creeper truss, alpine climbing becomes the style and here we see daring matched with the best that the steel workers offer as our cameramen climb over the uppermost parts of the raw framework to catch those angles that pass so fleetingly before you on the screen. Look at the accompanying still shot of Cameraman Jim Seebach fogging some of Movie-tonews' film clear out on the end of a section member and remember that the first stop down is 580 feet away. Do I thank my stars they don't want sound up *there*—you're telling me!

Those two hours atop the great tower saw enough exhibitions of pure guts that cannot be adequately described in many articles like this—but our picture has just started and as it is noontime we knock off for lunch. For the sake of posterity I submit this shot of Cameraman Irby Koverman guzzling a bottle of 98 proof cow juice to "fortify himself for the afternoon's rigors."

And now for the shots that are to "make" the picture. Arrangements have been made to have us hoisted clear up the front of the structure to a point over the top and then to swing us around the tower, then back around and down the front again. For this, the equipment is loaded into a light skip (or platform) attached to the derrick on the top of the tower by a series of cables. A guide rope between the skip and a lead cable running the height of the tower is attached to keep us from spinning.

All in readiness and the cameras securely fastened to the floor of the skip, the "hoist away" signal is given and we start our trip heavenward. It's an inspiring sight to see level after level with their components of riveters, bucker-ups, etc., pass like a modernistic kaleidoscope before you. The magnetism of the scene even enthuses our hard boiled "button pushers" as from all angles the cry echoes "great shot." And so our modern

Tower of Babel, soon to rival the Woolworth Building in height slips before us. Lee—we're over the top now! Every vestige of fog has disappeared and San Francisco lays before us like a bas relief map. Across the Golden Gate lies Fort Point where workers are frantically striving to regain those precious months lost when severe storms played havoc with their trestle work. Two huge masses of concrete mark the progress of the great cable anchorage there. Behind us lies beautiful Marin County with the grim coast defense guns of Fort Baker pointed determinedly out the Golden Gate. Is this an omen? Below—oh, far below, we can see mere dots getting into bug-like vehicles and driving off. To our right, a pearl in an emerald setting, is Alcatraz, formerly a military prison and soon to become a Federal Penitentiary.

Secure in the belief that our little skip swung away out there in the air is as safe as a trolley car, my attack of cold feet has left me and so I can be excused if at first I didn't notice the faint cries from the tower. Looking down, my heart takes a mighty leap and lands in the region of my tonsils as I see the guide rope hanging limply from the skip. Almost instantly we start a slow spin which gathers speed. Right then and there I decided that this type of sound could best be monitored through the headphones. It would have taken a crowbar to open my eyes. Boy, oh boy, what a wonderful "dry" jag you can get from a spinning skip. Here, our derrick engineer proves himself equal to the emergency as with skill approaching genius he lowers us gently into the tower where the guide rope is fastened once again.

Hundreds of feet of raw stock pass through the gates to become permanent records (and perhaps bore a blase audience) of another achievement of mere man in the

making. Can I be excused, in this age of daily miracles, if I pause to marvel that enormous projects such as these can be conceived and planned in every detail before a single piece of the structure is fabricated?

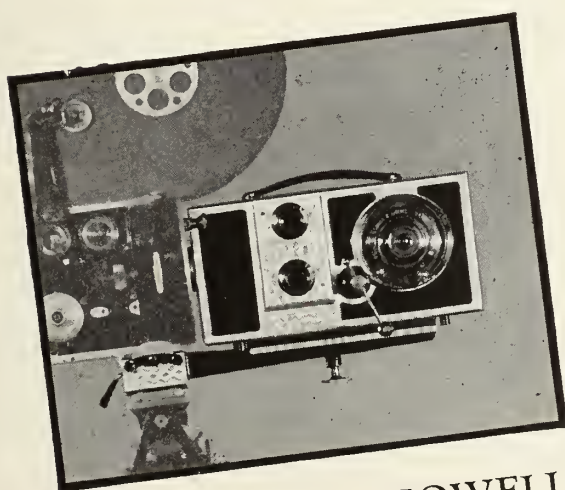
Everyone is satisfied with their stuff and the lower away signal is given with the added command "and hurry up" given by Jack McHenry. Almost instantly he regretted them thar words for our engineer took him literally and our descent was made in nothing flat.

Well, it's all over but the shipping. The weather held out just long enough for the story and we speed along the Marin shore through the thick fog rolling in to catch the last ferry that will bring us in in time for the air express plane leaving that night. Just another assignment completed and we are free to turn our thoughts to the next story—a picture of trained cats! But I'll gamble with you that our newsreel cameramen tackle it with the same enthusiasm that was so evident on the bridge story—because—well, not because it's all in a day's work but perhaps it's sort of part of the make-up of these fellows to get the most out of the old box no matter what's in front of it.

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WHY AND WHAT IS AN ASSISTANT DIRECTOR

By CARLISLE JONES



HE "big noise" on any motion picture set is the assistant director. Only men with strong voices are fitted for this job.

Studio visitors often go away with the impression that the assistant director they have seen at work on a set is the most important man in the company. This is not so, of course, but it is not as much of an exaggeration as it might seem.

William Koenig, studio manager and active production chief of Warner Brothers-First National studios, receives more applications from men who want to be assistant directors than from any other one class of people. Many seem to believe that such a job is an easy back-door entrance into the ranks of the directors.

This isn't true. More cutters and writers than assistant directors become directors. The successful assistant director is too valuable to his studio to be lost by promotion.

He is the straw boss of a picture. His work starts as soon as the story is set, long before the cast has been fixed upon definitely and sometimes before even the director himself has been named.

He holds a position of responsibility not unlike that of the stage manager in the theater. He is the liaison officer between all departments and crafts in the studio from the start of the preparation of the picture to its final cutting.

The assistant director is responsible for the management and the co-ordination of the directorial staff, which may include as many as forty men and women. He has charge of the cast and the extra players who may number hundreds or even thousands. He gives or relays all orders.

In simpler language he is the "big noise" on the set.

The "big noise" is also the big money saver for the producing company. He is the budget officer for the company with which he works and at the Warner studio he attends a daily "budget" meeting in Koenig's office every working day.

Upon his ability to plan ahead, to anticipate trouble and to circumvent it, the eventual profit or loss of a picture often depends. No wonder he has a reputation for being hard and sometimes unreasonable.

On the other hand a good assistant director must be tactful and able to deal with temperamental people. He it is who must ask Ruth Chatterton to work late at night, if that necessity presents itself, or to get up early in the morning to start for location. Miss Chatterton's well known dislike for early rising makes this task no easier.

If Edward G. Robinson has been called to the set and an unavoidable delay in production leaves him idle for two hours—hours in which he might have bought a new chair for his new house—it is the assistant director who has to placate him.

Not all famous players are punctual by nature. Ruby Keeler, who loves to oversleep, must be checked by telephone each morning during the making of one of her pictures, to make sure that she will be on hand when needed. If the assistant director forgets to do that and Ruby forgets to arrive on time it is the assistant director who gets

the blame—not Ruby.

Often the assistant director has an assistant. Sometimes, with special pictures when a great many extra people are to be handled, he will have two or even three assistants. But the responsibility is all his.

Good assistant directors are the scarcest article in Hollywood, according to Mr. Koenig, who has hired and fired hundreds of them. He recruits them from all conceivable sources. Since they are only indirectly concerned with the actual filming of the picture, they are not necessarily of the "artistic" type. More often they are chosen for their ability at handling difficult people and their capacity for getting things done.

Recently Koenig garnered one promising young assistant director from the ranks of the nation's football heroes. He is Russ Saunders and he finds use for all his football training in his new job. Most recently he worked with Director Ray Enright on the picture "Hells Bells." It was filmed during the football season and played by people who are without exception football fans. Russ had an easy time with that picture.

Many assistant directors are tied, unofficially, to one director. Gordon Hollingshead, a veteran in the business, always assists when Mervyn Le Roy directs. For many years Hollingshead was the assistant director on every picture which his friend, John Barrymore, made.

Barrymore himself wrote a public tribute to the assistant director not very long ago.

"An assistant director," Barrymore said, "must have the tenacity of a bulldog, the fighting spirit of a Jack Dempsey and the diplomacy of a Talleyrand."

Most of them are hoarse voiced from years of shouting at milling crowds of inattentive extras. Most of them are good fellows, too, who hunt out and help those on a set who need help most. Theirs is a troubled existence and they invariably have a deep seated sympathy for the underdog.

Important people have gone out of their way to sing the praises of the studio property man, a modern miracle worker who never admits defeat. But until recently the assistant directors have gone almost unnoticed—even in Hollywood. A few months ago a place was made for them in the Motion Picture Academy of Arts and Sciences and their real importance to the industry was partially recognized.

Some of the best known director-assistant director combinations in pictures include: Michael Curtiz and Frank Shaw; George Fitzmaurice and Hezi Tate; Clarence Brown and Charlie Darian; Howard Hawks and Dick Rossen; John Stahl and Scotty Beal; Alfred E. Green and Bill Cannon.

There is one misapprehension commonly in circulation about assistant directors. They do not, as a rule, carry the director's favorite cigars about in their pockets.

That job is reserved for the ever-active property man. Almost every property man has one ambition. That is that he may become, some day, an assistant director.

They generally make good ones too, according to William Koenig, the studio manager.

A CINEMATOGRAPHER LOOKS IN ON TELEVISION

By RAY FLINSKY

IT seems that all this started in 1885, when an inventor by the name of Nipkow built an apparatus called the electrical telescope, which employed the same theory used in television. During the succeeding years and up to the present time we have been waiting for someone to bring out something by which we could see for ourselves and in our own homes the wonder of television.

But this someone was always just around the corner. The nearest we could get to television was to listen with the aid of our own short-wave set, to the buzz saw noises and the voice of the announcer.

After listening for several months to the local station W6XS and hearing the familiar titles of our own Hollywood motion picture productions, my curiosity got the best of me and I took the advice of the announcer and sent for the data on their receiver. This information was published in THE INTERNATIONAL PHOTOGRAPHER, March issue.

The next step was to gather in the material called for in the diagram. This caused a temporary delay. I found that the cost of the Neon lamp, motor, scanning disc and the numerous other gadgets that were required would put a dent in my income tax report. So I looked around the attic, the neighbors' basements and into the telephone book until I found that by changing the hook-up of the diagram a bit and by using a varied assortment of parts, I could at least start operations. Among the parts were a Wurlitzer player-piano motor of uncertain age and speed, a "J" Slipper clutch removed from an ancient developing machine, and a 3-watt General Electric Neon glow lamp, this latter being a maiden aunt to the television Neon tube.

For the scanning disc, I first made a plan on paper, from the directions of W6XS and transferred the markings onto a piece of cardboard advertising a well known cigarette. This card I procured at the neighboring drug store. I then punched the holes with a push pin tapered to the correct sizes.

The four above mentioned articles, not including the push pin, constituted my televisior. I might add that the televisior is to the television set what the loud speaker is to radio.

My receiver contains six type 24 tubes and a type 45 power tube, which are a bit older in the realm of radio than they would care to admit. The resistors and by-pass condensers are of good quality and were obtained by a major operation on the family radio.

After assembling this heterogeneous supply of parts, the reader can well imagine my joy (as well as amazement) to see the indistinct, yet discernible figure of a man, dressed in white knickers, swinging a stick and then running like he was in a great hurry. I later discovered that he was a baseball player, but never did find out if he was the Big Bambino or not.

After making a few adjustments, the picture came in more clearly and the succeeding programs were received with gratifying results.

On a recent visit to W6XS, I looked at pictures received on a television set built by Mr. Harry Lubeke, chief engineer of the Don Lee Television Station. These were about 6x8 inches in size and of a very fine quality.

Although the image is only one-third that size on my receiver, I have the satisfaction of knowing that anyone with an interest in radio and access to a small workshop can have a television set at a very low cost, without waiting for the man around the corner.

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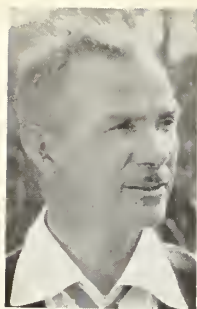
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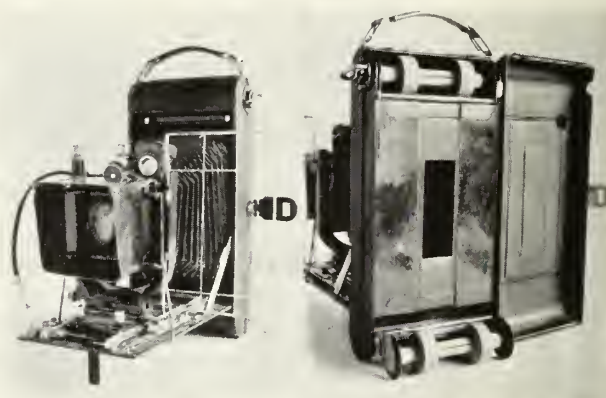
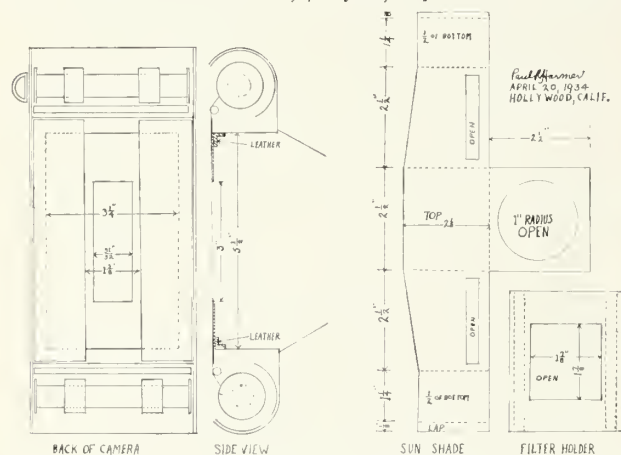
By PAUL R. HARMER

MANY photographers, both professionals and the serious-minded amateurs, like an all around compact camera. This camera should be versatile enough to do several kinds of work. Such a camera can be had in an ordinary $3\frac{1}{4}$ by $4\frac{1}{4}$ or $3\frac{1}{4}$ by $5\frac{1}{2}$ roll and plate camera.

I have a $3\frac{1}{4}$ by $5\frac{1}{2}$ Zeiss Ikon fitted with a 6 inch Zeiss Tessar and I use everything in it from the motion picture film to the full $3\frac{1}{4}$ by $5\frac{1}{2}$ plates or roll film.

24 gauge plate. This void must be taken care of by gluing a piece of velvet or black paper, just the width of the film, to the camera back.

A small piece of black leather should now be glued to the top and bottom of the lens side of the aperture plate. This is to stop any light leaks when the lens is open. Paint the plate with black lacquer and polish very carefully where the film will touch it, because a small scratch will spoil a picture.



This same lens serves all purposes by using a $4\frac{3}{4}$ inch supplementary attachment and a 9 inch supplementary attachment. There is no need of making any change in the camera at all in order to use these various films; the only requirement is a few accessories, easily carried in the kit, or installed before going on a trip. I will show you exactly how I handle motion picture film and then you can use your own ideas about the other size roll films.

Making an aperture is the first step. I used 24 gauge brass plate, just the size of the aperture in the camera shown, $3\frac{1}{4}$ by $5\frac{1}{2}$ inches. In the center of this plate is the aperture for the motion picture film $31/32$ of an inch by 3 inches long. I chose this size because I wanted to get all the picture my $4\frac{3}{4}$ supplementary attachment would permit and yet allow big enlargements for 11 by 33 inch panels, also this size aperture gives me a full figure 2 feet wide and 6 feet high at 10 feet. If a smaller aperture is wanted it is easy to mask off from the inside.

The next step is to put the film guides on the aperture plate. This, too, is of 24 gauge brass and overlaps the top, sides and bottom; allow $1\frac{1}{8}$ of an inch for the width of the film, then sweat solder these guides securely to the aperture plate. This aperture plate should now fit in your camera snugly. Careful fitting is necessary, a small screw or bolt can now be placed in each of the four corners, to hold it fast. If you are afraid of injuring your camera a short piece of adhesive tape will hold it in place, as the aperture plate fits snug and can't move either in or out because of the guides and the back of the camera.

The next step is to set the roller guides in place, using a straight edge; see if the aperture plate aligns with them. This is very necessary. Your film must run straight and remain in a perfectly flat plane.

The motion picture film is only six one-thousandths of an inch thick and lies down below the surface of the

The take up spools are made of hard wood, a hole is drilled $15/32$ of an inch in diameter. Place the piece of wood on a lathe, centering the hole in the chuck and turn the piece down to $1-3/16$ in diameter. Cut them off about $1/2$ inch long. They will now slip over the axle of the regular spools which any photograph finishing shop can supply. Place them in their holders in the camera and carefully line them up with a piece of film. They should fit snugly to the film, so you can use a black paper backing for your film and have daylight loading.

Try a piece of old film and count the number of turns on the film take up. You will soon see how many turns are necessary to bring your pictures up out of the way.

The next item to consider is the focus of your camera; very few folding cameras are properly focused by the scale which comes with them from the factory. Use a piece of ground film or ground glass; be sure it is in perfect position, then make your own focus scale. Make a separate scale for each lens combination. I prefer to do this at night. I use a carbon light. One of the wires to this light is cut and bared, just a small piece of copper screen about one inch square is fastened to each of these bare ends, then take a glass of water and add some salt. By moving these two little pieces of screen toward each other the carbon light brightens and moving these screens apart the carbon light dims. Focus on the filament and use a strong magnifying glass. The better you do this job, the better your pictures will be. For infinity focus on a distant electric sign or a star. A suitable view finder must be had. I used a white wire on the finder that was already on the camera, as you can see in the picture.

If you wish to use small plates it is easy to take a thin piece of sheet metal and cut to the size that fits in the plate holder. If you wish to use smaller cut negatives, cut an aperture in this sheet metal, but leave about half an inch in the corners. Cut a small slot in this piece so

the corner of the film will fit into this, then slide the sheet metal and film into the holder—and there you are. Try this with an old negative and you'll see how easy it is. I have used $2\frac{1}{2}$ by $3\frac{1}{2}$ plates in an 8 by 10 still camera by this method. This is "Telephoto De Luxe."

The next accessory needed is a sun shade and filter holder. This is made of a single piece of thin sheet metal 26 or 28 gauge and the layout is similar to the layout which I have given here. The lens opening is 2 inches in diameter, which will just fit around the outside of my Zeiss Tessar. The matt and filter holder slides in and

out and is made to accommodate 2 inch square filters and matts.

When a person can afford to have only one camera and that not a real expensive one, this combination will serve very well.

In this article I am endeavoring to help the serious-minded photographer who needs two or three small compact cameras, but cannot have them for financial reasons.

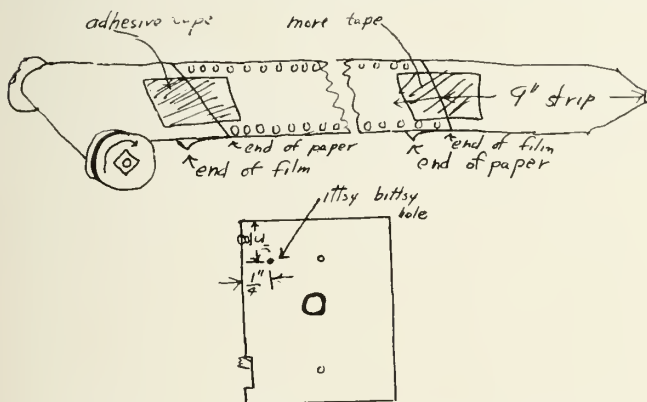
After all has been said, it is good pictures you are trying for—and a good picture is good photography in anybody's camera.

MINIATURE PRICED MINIATURE CAMERA

By KEITH LABAR

MANY of us are unable to own a miniature camera on account of the cost of such equipment. But there is a new camera on the market that perhaps has been overlooked as it is not advertised to use motion picture film. This is the Norton camera, selling for four bits, and which can be used with motion picture film very nicely.

If one has the necessary extra spools and the red paper it is a simple matter to wind up negative stock and use it the same as the film made for the camera. However, this makes possible only six exposures. The better method is to discard the usual long strip of red paper and use two short pieces, attached to each end of the film, similar to the method used in the cine-kodak. This makes possible a 30 inch strip of film, good for about sixteen pictures. The film must be attached to the 9 inch strip of paper as shown in the illustration or else the leading end of the



film will catch on the aperture and pull off from the leader, which is exasperating, to say the least.

It is necessary to effectively seal up the red window at the back of the camera. A little sealing wax on the inside does the trick. Now, you say, how will we know how to turn up the film? If one is too lazy to make the "clucker", to be described, it is necessary to use the following table of number of turns of the spool:

After threading, to bring film up to starting point, 11 turns.

Thereafter, $1\frac{3}{4}$, $1\frac{1}{2}$, $1\frac{1}{2}$, $1\frac{1}{4}$, $1\frac{1}{4}$, $1\frac{1}{4}$, $1\frac{1}{4}$, 1, 1, 1, 1, 1, 1.

This schedule gets out of hand at times and requires a secretary or bookkeeper for best results. So the clucker was invented. This consists of a piece of copper wire, fastened to the camera near the lens, and extending back and engaging with, the perforations on one side of the film. As we turn the spool, this makes a snapping sound and it is only necessary to count nine snaps, and the deed is done. Or if you prefer, one end of the aperture is masked off $\frac{1}{8}$ of an inch and then we give 8 snaps, making our negatives the same size as other miniature cameras. Of course the perforations could also be masked off, but there is no point in doing so, as a comparison of pictures made with sprocket holes showing and pictures

made by masking off to give the regular $1\frac{1}{2}$ inch shows that the one with the sprocket holes looks distinctly larger.

No camera is complete without a lot of gadgets and so we have them for our MPM camera. Although it is possible to make portraits without much fuzziness, yet a portrait attachment can be used with good results. This is one lens from a pair of ten cent store spectacles, focal length 20 inches. And for that copying, a six inch focus magnifying lens selling at 10c makes it possible to get down to six inches from the object.

And those night pictures. These require a time exposure. This may be done by drilling a small hole in the camera in the position marked, and inserting a wire. The shutter opens when the lever is pushed down and closes when the lever comes back up. Remember that the hole goes through only the outer shell, and must be drilled with the lever up. One or two minutes gives a good picture at night.

The writer offers to wind up some spools, which is really quite a job, in exchange for some short ends. Please, mister, have you got any ends today?

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WITH CAMERA AND COMPASS IN THE CARIBBEAN SEA

(Continued from Page 5)

two sphinx-faced Caribb sons awaiting the photographer. I was just about to snap them when two more sphinx-faced Caribs ran up to get in the picture. The next attempt was interrupted by another diminutive member of the family who swooped down on us from nowhere. All efforts to induce smiles failed, so we photographed them as they were.

Strange what a zest these natives have for being photographed. In Grenada several made appointments to have their pictures made and at the appointed time appeared all washed and starched. On one occasion, half a dozen black youngsters swam out to the boat and teased to have their pictures made. I lined them up on the forward deck, brought them into focus and said: "Ready!" In an instant they snapped into the pose of boxers, fists raised, jaws set, like so many Jack Johnsons. We may have to sell the camera to send back all the pictures we have promised.

For standard light conditions in the tropics we used diaphragm stop f:9 and a shutter speed of 1/60th when using orthochromatic film, using a larger stop according to our estimate of light conditions. We followed the standard of f:16 and shutter speed of 1/60th when using panchromatic film under average light conditions. We found the orthochromatic films better suited to our use than the panchromatic. Light conditions in the tropics are so consistently favorable that we found little need of the greater sensitivity of the panchromatic emulsion. On a small boat which has no space for a darkroom and chances of getting film light-struck are so great we felt much more secure with the orthochromatic film.

Thanks to our Leica, the short months of blue water, coconut trees, and interesting people are not only memories. We have several hundred good pictures to carry us back to the sunny green islands which shall long have a place in our hearts. And fortunate it is that we have our pictures to carry us back, for the sturdy ship which saw us through six months of adventure is no more. When two days away from Miami, Florida, which was to be our final destination, our keel stuck a submerged coral reef two miles off shore and forty miles from the nearest town—on the north shore of Cuba. It seems a bad dream as we recall the events of that fatal night—the grating of the lead keel on the coral, our frantic efforts to kedge *The Seal* back to deep water, the salvaging of our instruments, our Leica, and our precious negatives, sleepless hours spent on a deserted island covered with grotesque mangrove trees and infested with mosquitos. A bad dream to be sure, but a true one. The splinters of *The Seal's* smooth white sides have taken their place on the beach beside the bleached remains of other good ships which have met a similar doom.

The other night we saw our little ship again in all her glory, close-hauled, decks awash, sails stiff with the strong trade wind. *The Seal* was once more roaring through Boca Del Drago between Trinidad and the coast of Venezuela as did Columbus long years ago. She was alive again! A dream, you ask? No, we were quite awake. We were seeing our projected pictures for the first time upon a screen. And yet it was a dream. A dream which carried us back to endless stretches of blue water and green islands, and experiences which we shall ever treasure.

UNIVERSITY IN MOTION PICTURE PRODUCTION

(Continued from Page 9)

One sequence, a touchy situation in which was involved a love scene which must be interpreted by the audience in only one way—the right way, was shot two entirely different ways and to a select preview group these two versions were shown side by side, at the point it occurred in the story. Then it was up to the preview group to judge which love scene was most appropriate to the theme of the story, and to the fact that the picture was a university production.

In one instance the story called for the girl to be riding horseback through the forest, when suddenly the horse was to step on a sharp stone (supposedly to be lodged in the hoof) and rear up, almost throwing the girl to the ground. This was done by using a double, in this case our young technical director, who donned the girl's costume, put on a wig and rode the horse, making him jump around furiously. This scene was photographed in a long shot, and when cutting, a close-up of the girl's face as if she were having a difficult time with her horse, was inserted in the middle of the action. This gave a perfect illusion and no one ever suspected that the girl herself did not ride the horse in that scene.

In photographing the "chases," as they are so appropriately called in Westerns, we used three cameras simultaneously from different points of view. This eliminated about one-half of the galloping which would ordinarily be necessary if only one camera were used. For instance, if two horses were desired to be shown galloping in a continuous piece of action, three cameras were set up at various vantage points along the course, each one getting an entirely different angle of the same piece of action. In the first sequence, when the scenes were cut in side by side, one never suspected that the galloping he saw was repeated three times in succession, as the angle at which they saw the galloping was entirely different each time, therefore insuring non-recognition of the action duplicated.

A sad occurrence during the filming of the picture was our temperamental "star," an indifferent bullfrog. The script called for a frog in a rain barrel, both of which were to be shown in a raging storm. The sequence was to denote a lapse of time, the first shot showing the frog swimming around in the barrel half full of water, the next shot showing the barrel now overflowing and the frog climbing over the top of the barrel. Well, that seemed easy—when we read the script. But, as in most cases, doing and contemplating doing, don't always correlate. It was decided to shoot this sequence at night, and so cameras and lights were set up, as were rain barrel, artificial foliage and a very realistic overhead rain system. Two bullfrogs were obtained from a nearby frog farm, one to be used as a sort of "spare," in case we wore one out. This extra precaution must have been intuitive, as that is exactly what happened; we not only wore one frog out, but he got loose and ran away, while we were inside having a midnight morsel. We had already spent three hours and several patient dispositions in attempting to get Mister Frog to do what we wanted him to do. The idea was to get him to swim on top of the water at just the right time, but every time the camera was ready to grind, he would casually sink to the bottom, and there peer up at us with great indifference. Then as soon as he (probably) saw that we were either shifting lights or giving the rain system a rest, which by the way was drenching all of us, he would shoot to the top and paddle around for all he was worth, quieting down and continuing to the bottom as soon as we were ready to shoot the scene. This went on for hours, and as we mentioned before, with one frog worn out and no results on the film as yet, not even with all the pleading and jabbing of sticks

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toward that stubborn frog's anatomy. So we dragged out the "spare" frog and started all over again. This time, after several more hours of downpouring artificial rain and increasing natural cold, we finally succeeded in photographing the desired effect. Then after rushing to the "milk bottles," we developed a test on which we were sure of a miniature masterpiece. To our terrific dismay, and even agony, we discovered that the camera had been loaded with positive stock instead of negative! What a blow. But there was nothing to do but shoot it over again, this time making certain that the assistant cameraman wasn't thinking of some remote subject while loading, as probably was the case before.

But it is just these kinds of occurrences, coupled with hard work, endurance and stick-to-it-iveness which go to make up an amateur picture which gets finished. I lay particular stress on that point of getting finished, as in my own experiences, and in my knowledge of what many of my fellow amateurs have done, I know how easy it is to start something and not finish it. Whatever you do, no matter how easy or how hard, if you start something, finish it. That is the factor around which is laid all other exponents of the non-professional film. All other attributes of the amateur film company, which may be fertilized by the intangible idea of making a movie, are thrown to the winds if what is started is not finished. In our own case, only through the proper selection of cast and staff; people who were professionally minded and whose only thought was to do things professionally, was the finished picture possible. Artistic souls and inspired genius, unless suppressed by level-headed and persistent organization, will not usually go very far in completing a motion picture, professional or amateur, as has certainly been proven. Amateurs, to my way of thinking, should not attempt to work out their own formulas on how pictures should be created. After all, the professionals must know what is best or they wouldn't be professionals. Watch the way Hollywood does it, for there is the ultimate to which all amateurs should look for the solving of their problems.

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WORLD MOTION PICTURE THEATERS TOTAL 60,347

There were 60,347 motion picture theaters operated throughout the world at the end of 1933 of which 41,822 were equipped for the exhibition of sound pictures, according to a study by N. D. Golden, Specialties Division, Department of Commerce.

The United States is shown as first—ranking among all countries in the number of motion picture theaters of

record with 19,000, of which approximately 15,000 are now operating and equipped for sound, the study shows.

The regional distribution of motion pictures throughout the world, as recorded by the study, shows Europe ranking first with 29,693; the United States, 19,000; Latin America, 5,270; Far East, 4,639; Canada, 1,100; and Africa and the Near East, 645.



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RUDDY GERAUS

MINIATURE CAMERA PHOTOGRAPHY

(Continued from Page 11)



A Big Catch: Taken with a Leica Camera by Oscar Soetbeer.

When a lens hood is used it will prevent light that is not used in making the negative from entering the lens. In my own work I never make an exposure unless a hood has been previously slipped over the lens. There are occasions when the hood is left at home. However, with a small piece of pasteboard and a few bits of adhesive plaster a lens hood can be improvised in a few minutes. Use a lens hood for every "shot" you take, and you will notice a decided improvement in your pictures.

The Super Ikomat Camera: This new camera, featured by Carl Zeiss, Inc., introduces one of the latest advances in roll-film cameras in that it is supplied with an accurate range finder which is connected to the lens. The range finder is of the usual military type; that is two images are seen, the lens is turned until both images coincide, at which time it is critically focused.

The Super Ikomat uses the standard 8-exposure $2\frac{1}{4} \times 3\frac{1}{4}$ roll-film (No. 120, B-2, etc.) and a removable metal mask allows either 8 exposures $2\frac{3}{16} \times 3\frac{3}{8}$ inches or 16 exposures $2\frac{1}{8} \times 1\frac{11}{16}$, to be made. The latter size negative makes this camera a member of the miniature class.

Optical equipment includes a Zeiss Tessar f:4.5 10.5

cm. lens in a focusing mount. The shutter is the Compur, enabling exposures from 1 second to 1/250th second, and T. & B. The new 12 second delayed action feature is also included.

The camera is of the usual folding type retaining the drop bed and self-erecting front feature. The body is all metal covered with grained black leather.

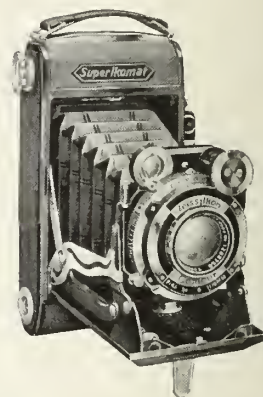
A Note on Printing Papers: Hard papers have the tendency of bringing out graininess in the negative, making the general use of soft printing papers desirable in many cases. Of course if the negative possesses extreme fine-grain characteristics this is of no import. In cases where the negative is prone to produce a grainy print, it is advisable to use a soft paper compensating for the low contrast it produces by using a contrasty paper developer.

The Super Ikomat

Camera Featured

by

Carl Zeiss, Inc.



OBITUARY

Ernest L. Wallace, prominent patent attorney, well known and popular in the motion picture and oil industries, passed away, April 18, at his home, 111 West Seventh Street, Los Angeles.

Mr. Wallace was fifty-five years old and died suddenly of a heart attack. He is survived by wife and family.



In Memorium

Carl Meister has gone "to join the innumerable caravan which moves to that mysterious realm where each shall take his chamber in the silent halls of death."

On the night of April 18, while romping with his baby, he suddenly called to his wife that he felt ill and he had time only to place the baby safely on the couch before he slumped upon the floor and immediately passed away.

Brother Meister was for many years operative cameraman at Universal and he was popular with both his employers and his fellow craftsmen.

To his bereaved wife The International Photographer extends assurances of profoundest sympathy and sorrow.

MOTION PICTURE PRODUCTION IN SOUTH AMERICA

(Continued from Page 14)

Production in the Argentine

There is no company at present that is equipped to produce pictures of the required quality. The company I was with before has an old Bell & Howell camera and a Debie developing machine, but has no technicians and needs badly to be reorganized.

Several local people are experimenting in an effort to invent a sound recording machine. This would be the same as if I went out tomorrow on some deserted island trying to invent a vehicle that will run without horses. And they still spend thousands of dollars on tests and tests and tests, instead of wiring ARTREEVES for a complete set. But they will not listen.

The country is beautiful, has the well known Tango and is rich in old legends which could easily be adapted for screen purposes. The possibilities are enormous, but not until foreign technicians will take the matter in their hands and with foreign organization, will there be local industry.

The gorgeous countryside lends itself wonderfully to background of even a Hollywood made picture. Some of these days some smart producer will realize the gold mine that no camera has touched as yet. Production cost would be considerably lower than in the States. Of a fairly good picture, Buenos Aires and its province would and should cover the negative cost. Then there is all of South America, Spain, Mexico, Central America, the West Indies, etc.

BI-POST LAMP NOW MADE IN 2000-WATT SIZE

The Incandescent Lamp Department of the General Electric Company, Nela Park, Cleveland, Ohio, announces the adaptation of the bi-post base construction to the 2000-watt, 115-volt G-48 bulb lamp.

The application of the bi-post design principle to this popular motion picture studio and spotlight lamp insures



a more rugged lamp and one in which the relative position of the base and light source is determined entirely by the limits of metal working accuracy.

The list price of the lamp is \$13.00. Its maximum over-all length, from shoulder of prong to center of filament, is 5 inches, and it has a life of 200 hours.

Note: The new 2000-watt G-48 bulb lamp in bi-post base is shown at right in the attached photograph, with the conventional screw-base design at left.

MOTION PICTURE SOCIETY OF INDIA

(Kitab Mahal, Hornby Road, Bombay)

In response to the requests from overseas manufacturers, the proposed Photo-Cine-Radio Exhibition and the first Motion Picture Convention, April 1934, organized by the Motion Picture Society of India, have been postponed to November-December, 1934, in order to enable such manufacturers, Societies, Associations and others interested in the Motion Picture Industry to participate more effectively in the Exhibition and Convention.

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SMALL FILM-IANA

(Continued from Page 6)

taking it except from the position of objects in the picture which he knows to be vertical or horizontal. This peculiarity permits a number of strange effects, the most common of which is that of a man walking up the side of a building, made simply by constructing a section of the side of a building in a horizontal position and making the man walk along it normally. It is also valuable in creating certain psychological effects resulting from the unusualness of abnormal camera angles.

The screen is the film artist's canvas, and on it he can put any subject he wishes, can re-arrange this subject by choosing a particular camera angle and lighting arrangement, and compose it into a pleasing picture. He has the advantage over the painter, however, for in the same space he can immediately follow one picture with another and this with still another, and so on, without at any time the screen being blank, thus creating a combined effect which is not possible in any other pictorial art form. With this succession of moving visual images the film artist can readily build up any effect he wishes. He does not even need to regard continuity of time and space—he can jump from prehistoric times into the imaginary future and back again, or travel from the earth to a distant planet, all in a fraction of a second. The camera can likewise jump from a distant shot of an object to a full close-up without any intervening time—a feat which certainly cannot be accomplished in real life—or it can be moved from one place to another gradually.

It is even possible to show two entirely separate events, which may have taken place at widely separate times and places, at the same time and on the same screen by means of double exposure and other trick effects, or to cause these separate events to dissolve one

into the other without any abrupt change. The film artist can slow up motion to produce a lazy feeling or to analyze a motion too fast for the eye to follow; he can speed up motion to produce the feeling of activity or to analyze motions too slow for the eye to perceive, as the opening of a flower; he can reverse motion to create a comical effect or assemble broken parts into a whole; he can stop motion suddenly at any point to note what is happening at that point. A scene can be distorted, diffused, or thrown out of focus at will to produce numerous psychological effects. In short, the film artist has at his disposal a variety of effects which is found in no other art form.

The limitations of the medium are in reality characteristics which form the tools for the creative artist. A thorough knowledge of these characteristics and how they can be most effectively used will open an entirely new field for the amateur cinematographer. I have intended here merely to introduce the cine-amateur to this field, and in future articles I will go more fully into the many aspects that make up motion picture art.

For the amateur who wishes to go deeper into the subject I suggest, besides books on photographic composition, three outstanding books: "FILM MANUSCRIPT" by Pudovkin, "THE FILM TILL NOW" by Paul Rotha, and especially "FILM" by Rudolf Arnheim, which I have used as a source for some of my material. These books may be a bit advanced for the amateur, but he cannot help but profit by reading them. They may even seem quite radical in some respects, but this will set the amateur thinking along new lines and get him out of the rut of mediocre, uninspired pictures. They will make him appreciate more fully the medium with which he is working, and realize its great potentialities, as yet almost untouched, thus helping and inspiring him to make pictures of which he may well be proud.

B & H ANNOUNCES A NEW FULLY AUTOMATIC SOUND AND PICTURE CONTINUOUS PRODUCTION PRINTER

The Bell & Howell Company has created a "new fully automatic continuous sound and picture production printer," which is now being exhibited and demonstrated to the Motion Picture Laboratories on the West Coast.

This apparatus, which is the result of several years of experimentation by the engineers of the Bell & Howell Engineering and Research Laboratories at a cost of over \$200,000, permits the simultaneous printing of both the sound and the picture records, and its fully automatic operation suggests its comparison with the automatic screw machine which has practically revolutionized machine shop practice and its economics. The following will outline some of the revolutionary features of this machine:

1. **FULLY AUTOMATIC OPERATION:** After being set up, the printer does not need any further attention except for threading it with raw positive stock. It runs in either direction so that the negative, after the initial threading, does not require further handling nor inspection.

2. **LIGHT CHANGES:** These are secured through the use of a film traveling matte running between the printing light and the printer aperture. A positive and instantaneous change of the light intensity without alteration of its spectral characteristics is thus obtained for each scene and, if desired, for any portion of any scene. The film traveling matte is inclosed in a dust-proof compartment together with the negative, and the handling of both (after the original setting) is therefore eliminated regardless of the direction in which the machine is run and the number of prints that are to be made.

3. **PRINTING LIGHT:** Standard 250-watt, 110-volt, T-20 monoplan filament bulbs on prefocusing base are used.

4. **PRINTING SPEED:** A speed of sixty feet per minute is recommended. The machine can be especially adapted for higher speeds if desired, in which case lamps of higher wattage up to 500 watts can be used if necessary.

5. **PRINTING VALUES:** The densitometric control of the printing light values is absolute for a predetermined development "gamma" which insures at all times the exact duplication of print densities for both the picture and the sound records.

6. **CONTACT:** Intimate contact of the negative and positive films is secured by air pressure. Two cushions of filtered compressed air are formed at both back faces of the films at the printer gate. This eliminates frictional contact of the films with the printing aperture and the aperture gate.

7. **REGISTER:** An improved main sprocket similar in design to that of the B & H Model D Printer insures perfect registration within maximum tolerable limits of film shrinkage.

8. **CLEANLINESS OF FILMS:** Combination compressed-air and vacuum units cleanse both the negative and the positive film as well as the film traveling mattes before entering and after leaving the printing apertures and prior to winding at the take-up reels. This double action assures perfect cleanliness.

9. **TEMPERATURE CONTROL:** The heat generated by the printing lamps is dissipated through an ingenious cooling system, which insures the proper temperature for all parts of the machine as well as a comfortable temperature for the printing room irrespective of the number of machines in operation. The cooling system also insures dust-proof lamp chambers.

10. **LUBRICATION:** A fully automatic lubricating system supplies the proper amount of oil to all working parts of the machine every two minutes. A minimum of personal attention is therefore required. Special precautions have been taken to prevent the escape of the lubricating material, especially at film-contacting or any external points.

11. **DRIVE:** The machine is positively driven throughout. All film guide rollers are of the dry ball-bearing type. The motor is of the synchronous type insuring constant speed.

12. **BAFFLE LINES:** A special printing head is provided to print (simultaneously with the picture and the sound records) two black baffle lines (or light shields) between picture and sound record and between sound record and film perforations. The key-number printing for both sound and picture records is done at the main heads.

The above mentioned main features of the apparatus suggest by themselves the utmost accuracy and duplication of results in "release printing," as well as considerable economy in operation due to the almost complete elimination of the necessity of constant personal attention and time-saving factor which it involves.

Several protection features have also been incorporated, rendering the printer entirely "fool-proof" and eliminating all possibilities of wastage.

The machine cannot function if any of its parts are not in perfect order. The accidental "burning out" of a lamp, breakage of film, or any error in threading will lock the machine or stop it automatically, if the accident occurs while the machine is operating.

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CYCLES OF LIGHTING

Much has been said about picture cycles. We have had costume, mystery, gangster, sex and many others. Now we are back to costume pictures once more. It has been said that this is typical only of the motion picture industry and that other fields of art and science do not follow the same pendulum swing. How about the styles of furnishings, the clothes that we wear and the very food that we eat? All of these things seem to follow very well defined cycles. The reason for this is that human beings demand change.

At the present time we are starting on another cycle in lighting. For a time, sound limited us to the use of one type of equipment. Our method of working during the early days of sound pictures made that single type of equipment adequate. Now we are expanding into greater cinematographic fields again and our tools must be varied to meet the changed conditions. Arc spotlights and searchlights have found their way back to universal use and newly developed broadsides are finding their niche in our "Hall of Flame."

How far this return cycle of arcs will go depends entirely on the changing conditions, but we do not stand still.

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Mrs. Mitchell, with George, Jr., will accompany her husband and Victor Milner and family will be guests on the trip.

The ship will sail from San Pedro harbor as soon as Mr. Milner's current picture now in production at Paramount is completed.

The itinerary will include the Marquesar Islands, Papeete, Hawaii, and other interesting places, ending at San Pedro the middle of September.

Mr. Mitchell will take a camera to make a record of

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CONTROLLED REFLECTION

By MILTON MOORE

The art of cinematography has advanced in the past three years through a startling evolution. Screen results of today are undeniably far superior to any results heretofore obtained.

Art now as always is dependent upon science to produce the perfect medium of expression.

Eastman, Dupont, Agfa have given us a film almost perfect in monochrome reproduction. Bell & Howell and Mitchell have given us the cameras; Bausch & Lomb, Zeiss, Cooke, Astro have contributed the optical units; Mazda and National Carbon the lights.

With all of these perfected elements at his command the artist cinematographer is able to reproduce on the screen a picture which varies but slightly from the one he has painted with light in front of his camera.

Until recently scant attention has been given to the science of controlled reflection of sunlight. The cinematographer has continued to use the aluminum paint and "gold" type of reflector which was designed for use with the old "Ortho" and old "pan" negative stock.

At the request of Silas Snyder, editor of *The International Photographer*, the writer recently carried out a series of practical experiments with the new Helio-lite reflectors. The reflectors were used in research work of a highly technical nature, under conditions and requirements which demanded the utmost efficiency of all contributing elements. These reflectors were used in color photography where a normal requirement of volume and intensity by reflection were indicated.

Results gave definite evidence of the inventor's claim that Helio-lite reflectors reflect the solar spectrum with unusual fidelity.

Printed colors, closely, approximating the solar spectrum, when illuminated by reflection only, reproduced in the same bands as the same colors photographed in direct sunlight. The importance of full scale reflection in color photography can scarcely be over-emphasized. It is sufficiently apparent in the exquisite results obtained to be truly a controlling factor in exact color reproduction. In black and white research the reflectors showed a like efficiency.

The panchromatic film color sensitivity characteristics no longer require the use of a "gold" reflector to build up exposure, by intensifying that particular wave length in reflection.

It has been proven in the experiments conducted under exacting requirements and by several thousand feet of exposed negative that the full wave band reflectors produce a picture of the proper high light and shadow balance and rich in tone values in the softly illuminated shadows.

A minimum volume of reflected light only is required. Since all color values are actinic to the present pan film, it is

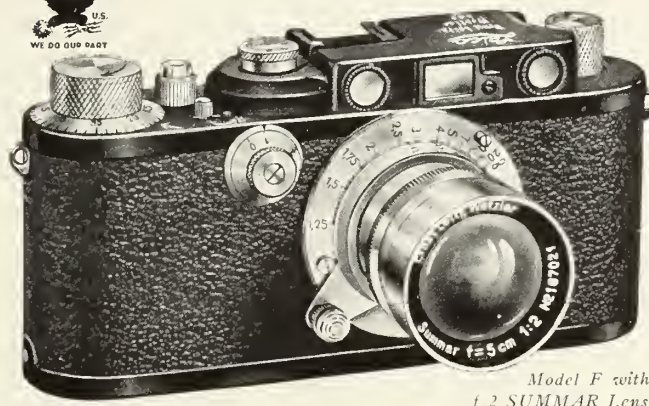


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LEICA photos made by Clarence Slifer, Hollywood, SUMMAR f.w lens wide open, 1/20th second exposure.

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not necessary nor desirable to produce normal exposure in one color band only, rather it is desirable to use the least intensity and the greatest diffusion possible in order to produce the soft shadow transparency necessary to secure the cameo-like close-up.

In the hands of the amateur 16 mm. cinematographer, the Helio-lites should prove a source of much pleasure, in the professional like results he may obtain. He need illuminate only the shadow side of the subjects to the brilliancy which the eye finds pleasing. He need not "allow" anything for imperfect reflection. This rule applies of course to film having a panchromatic color sensitivity characteristic.

The inventor of Helio-lite reflectors did not by accident discover the new substance with which the reflectors are coated. The material is the result of research entered into for the express purpose of producing such a medium.

Mr. John Q. Roscoe, member of the famous family in scientific research, is responsible for the Helio-lite development. The results obtained are thoroughly substantiated by spectrum analysis and other scientific tests.

Out of Focus

By Otto Phocus

GOING TO—— ON HIS——!



This little study in photochromolithography was captured between scenes by MacJulian and catches Bert Longworth sitting on his "burro" (!)



This month we will hold a contest for the purpose of finding out whether or not anyone reads this page. For the first 500 letters received at this office, supplying the missing words to the above title we will send at once, six subscription blanks for the INTERNATIONAL PHOTOGRAPHER. These blanks when properly filled out and accompanied by the necessary cash will be accepted by the office in order received.

The rules for the contest are very simple. Letters over 5,000 words will not be considered and the Judges will be selected promiscuously. All entry's must be in this office not later than January 1, 1936.

A suggestion. Going to heaven on his mule, is not the title. A well known star did this recently and it was rumored that some of the people working with him wished he had gone in the opposite direction. We hardly believe this though.



DO YOU KNOW

That Phil Tannura has returned to Hollywood for a visit after several years abroad.

That he should be made an Ambassador of Good Will by the British Producers as he is sure a booster for them.

That Ray Wise is a splendid actor. See Esquimo.

That Dr. Floyd Jackman (659) has been advertising in the International Photographer since March 1929, (Second issue), and has looked more cameramen in the mouth than any other looker in the mouth.

That you should not serve wine with the hors d'oeuvres. So I have been told.

That Bob Martin posts cards from Budapest, that "all's well."

That you should serve Chablis with the fish. If you catch one.

That if the Communists seize other people's "property", I have my eye on a swell red head.

That when Vic Fleming went to war, in 1917, Doug Fairbanks gave him a wrist watch and a bedding roll.

That when I signed up in the same war, I "Hocked" my watch on account of a "Bent" roll.

That Paul Perry and Bob Miller are getting some great stuff at Saigon, Dutch East Indies.

That in a recent article Producer George White says—Get a good cameraman, that's most important—treat your crews right.

That he discovered this on his first picture. Smart?

That Mickey Whalen reports: A director wanted to shoot some close-ups in the studio with artificial light. The Producer said: "This is a super production. Don't use anything artificial."



Diary of a Modern Pepys, with apologies to O. O. McIntyre, the London Symphony Orchestra, and don't forget to rack over.

By FRANCIS (SKIPPY) BURGESS, N.O.W.O.R.K.

Up and out before dawn—and by skates to the "Trois Petit Enfants" for breakfast on the cuff—did tip my hat on the way to George Mitchell, George Washington, and George V, also Virg. Miller and my zaney—and to breakfast on my favorite dish of G filters garnished with parsley—whistled to Greta Garbo and we fell to arguing over the origin of the word Status Quo. Home by fire escape to dodge the landlady, and to slit my mail—receiving invitations from Joan of Arc, Joan Blondell, Joan Crawford and John Arnold, to join them in a game of Catch-as-catch-can. Then to answer a pleasant long distance call from Howard E. Hurd, his voice as clear as if he were calling from Hollywood. In the evening slumming with Sol Rosenblatt, Al Smith and Dewey Wrigley. Later supping with Bernard Shaw, Louis B. Mayer and Eddie O'Toole—Swam home in my B.V.D.'s—did catch pneumonia and hell from my Zaney. And to find Who's Who from cover to cover and backwards, and so to find my bed.

THINGUMABOBS—I once walked thru a fog in London, so thick that it was impossible to read a newspaper 20 feet away—I also visited every Studio in Hollywood, and they all said no—Jack Dempsey is a dead ringer for Ted Sparkuhl—If they chewed the same tobacco, Leon Shamroy and Johnny Mescal could pass as brothers—Ernest Lubitsch plays the Harmonica when taking a bath—One word description of Alvin Wyckoff—President. There is something about the name Wokey that suggests Wednesday—Nothing as embarrassing as working on 1-A and running out of film on a "boom" shot.

THOUGHTS WHILE STROLLING—Wonder if that cop on the corner of Hollywood and Vine can repeat the Declaration of Independence?—Always an abundance of umbrellas around Cahuenga and Hollywood on rainy days—Saw the "Three Little Pigs" sixteen times, and will go again if I can get some more passes—Mentioning of "Alice in Wonderland" reminds me of Lewis Carroll the Showman—Gary Cooper's name begins with the seventh letter of the alphabet—Larry Ceballos staged the dance numbers in "Frankenstein"—The Four Marx Bros. shave only when they have to, which is every day—Babe Ruth sleeps in the nude, yet denounces nudism—I once knew a Cameraman that had to get up in the morning and go to work—Nothing as beautiful by night as London, Paris or Berlin—Nothing as up and down as crossing the Atlantic in rough weather—Am intrigued by the color and design of the new \$100 bills—It is estimated that over 500 members of the camera profession read trash like the above with their grapefruit—You have, no doubt, heard of wars to end wars—Gangster pictures to end gangster pictures and putting cameramen to work—And with this thought in mind and a bottle of wine under my belt—I wrote this column to end columnists—I hope that it serves its purpose—Thank you.

Why must G-E scientists know about SHADOWS?



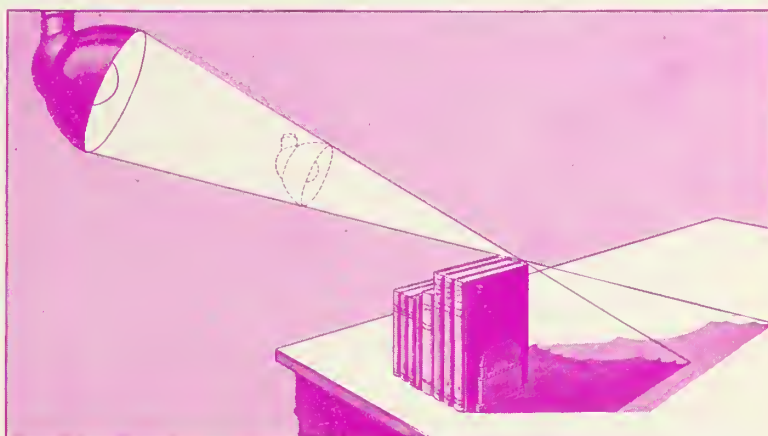
A. Harsh shadows produced by bare lamp



B. Soft shadow created by lamp in reflector

THESE three illustrations bring out, simply, three basic facts about shadow formation. Picture A shows the harsh, sharp shadows produced by a concentrated light source, such as a bare lamp. Picture B shows the softer shadows created by a somewhat diffused light source, such as that same lamp in a reflector. Diagram C illustrates the principle that the sharpness of a shadow depends upon the distance of a light source as well as upon its size . . . and hence that the sharpness of a shadow remains unchanged, provided the diameter of the light source is proportionally increased or decreased as the distance from source to subject is increased or decreased.

Cinematographers are familiar with these basic principles about shadows and with their several corollaries . . . and with scores of refinements of them gained from long, practical experience.



C. The sharpness of a shadow depends upon both the distance of a light source and its size

Why, then, is it important for G-E laboratory experts to be grounded in the fundamentals?

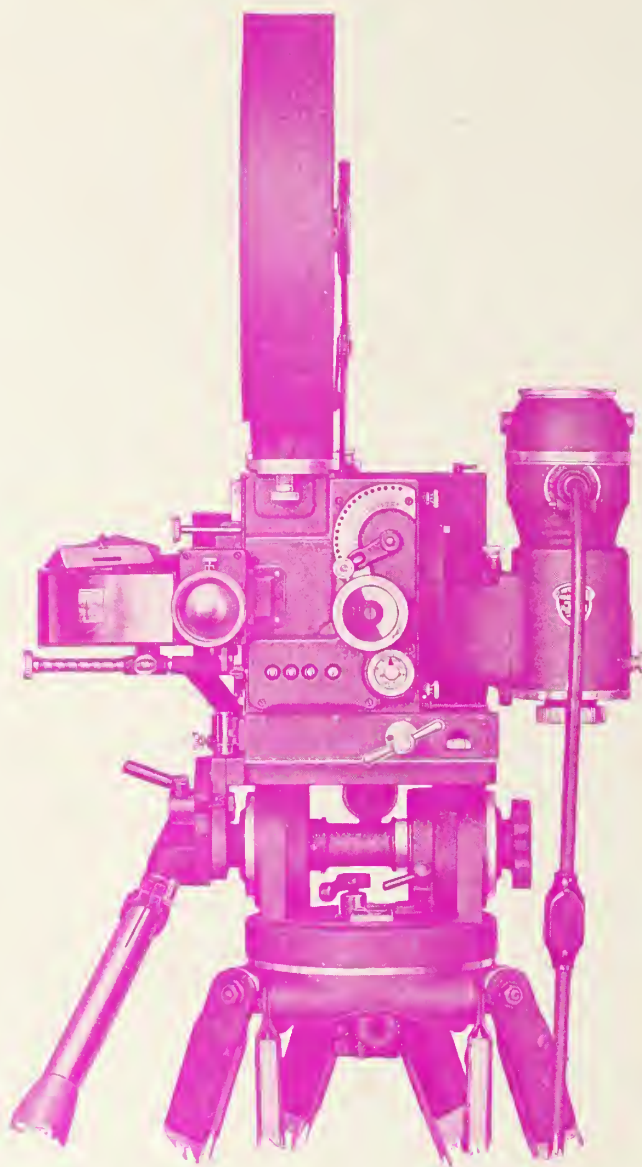
Because, by being well versed in the basic principles of shadow formation and of the whole art of cinematographic lighting, these engineers can work more intelligently with you in creating new lamps for motion picture needs. Likewise, they are better able to help you make full use of the many G-E MAZDA lamps already available.

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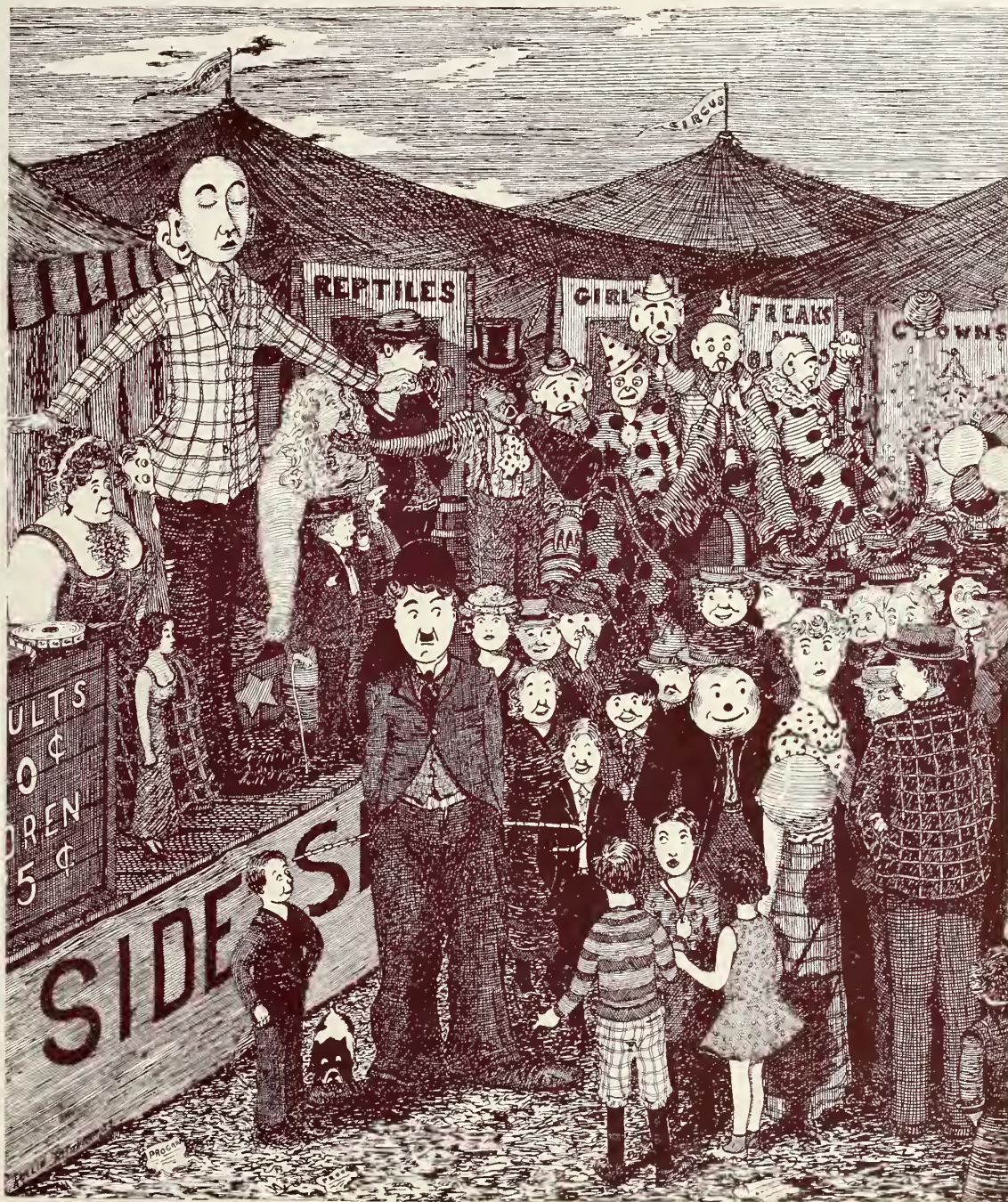
INTERNATIONAL PHOTOGRAPHER

HOLLYWOOD

TH YEAR

JUNE, 1934

VOL. 6
NO. 5




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Leave it to the Fans to know THE BIG SHOW when they see it!

CARTOON BY
ROLLIE TOTHERO

MOTION PICTURE ARTS AND CRAFTS



Photographed by Elmer G. Dyer
for M. G. M.'s "Night Flight." Altitude 22,000 feet. Du Pont Red Sensitive film; exposure, one three hundredth of a second; E22 filter with wide open lens.

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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 6

HOLLYWOOD, CALIFORNIA, JUNE, 1934

No. 5

SILAS EDGAR SNYDER, *Editor-in-Chief*

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HELEN BOYCE, *Advertising Manager*

A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing, Film Editing, Sound Recording, Projection, Pictorialists.

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This Magazine represents the entire personnel of photographers now engaged in professional production of motion pictures in the United States and Canada. Thus THE INTERNATIONAL PHOTOGRAPHER becomes the voice of the Entire Craft, covering a field that reaches from coast to coast across North America.

Printed in the U. S. A. at Hollywood, California



Mr. August Wolfman, Editor of our Department of Miniature Camera and Photography, whose work in this magazine has attracted international attention, is taking a vacation this month, but he will be with us in the July issue, as usual, with an extraordinarily fine article on "Tricks in Enlargement."

Among the attractive features to appear in the July issue of International Photographer are special articles by Lewis W. Physioc, Karl A. Barleben, Milton Moore, etc. . . . Charles Felstead, Walter Bluemel, Earl Theisen and Paul Harmer will entertain and instruct in their own inimitable styles, while several new names will also appear.

Two new articles to which the attention of our readers is directed are, one on the beginnings and evolution of miniature photography, and one on the history of lens making.

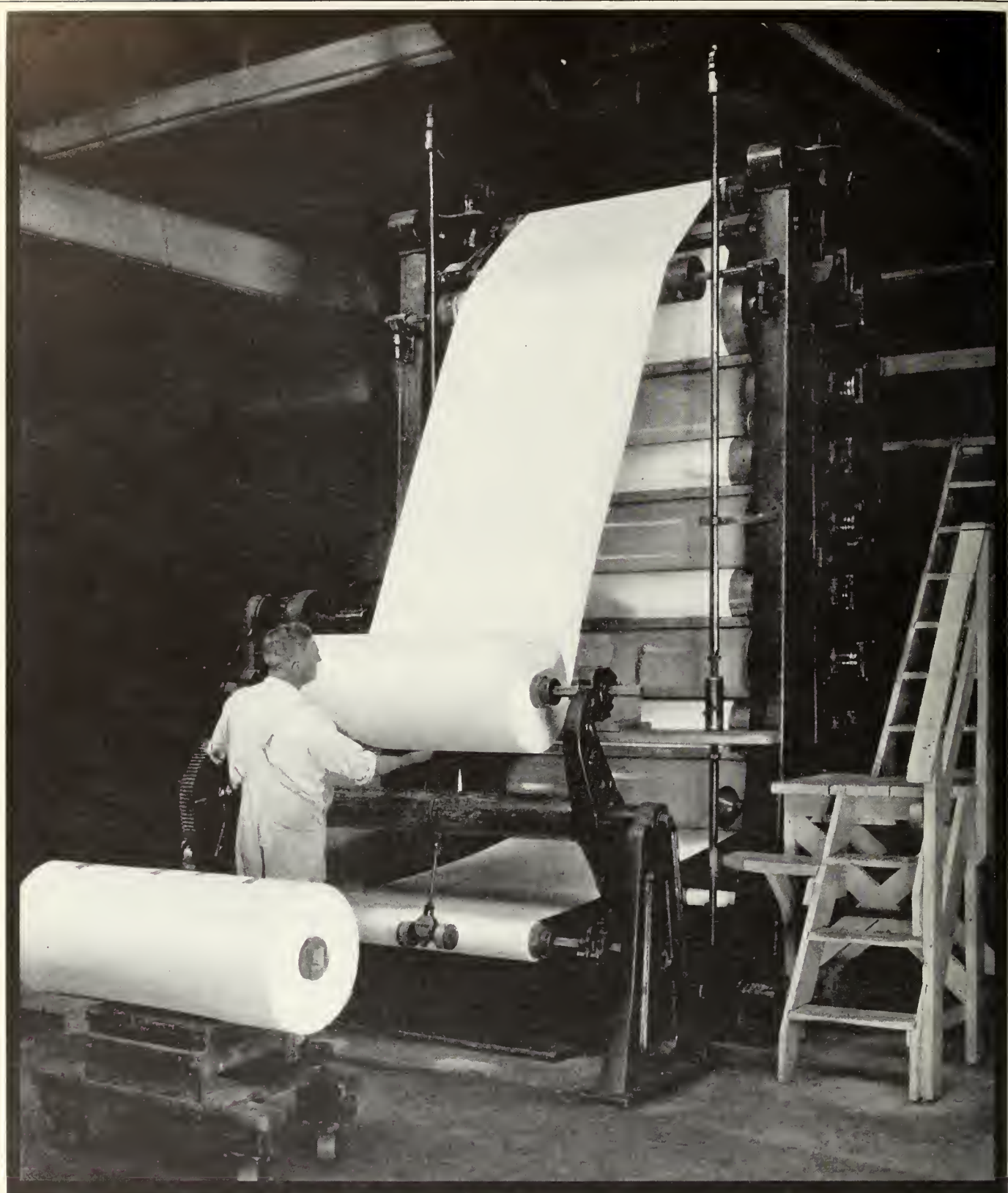
Mr. Charles Boyle, Out-of-Focus editor, will tell about the development of the famous Bucklebird camera.

Meet Mr. Earl Theisen, Associate Editor, International Photographer.

INTRODUCING MR. TOTEROH

The wonderful cartoon which ornaments the front cover of this issue of The International Photographer was done by Mr. Rollie Totheroh, for more than twenty years chief cinematographer of the Charles Chaplin Film Corporation. Mr. Totheroh is good enough in his cartooning to command space in any publication, as his ideas are original and his style is something quite his own. The cameramen are proud of him both as cartoonist and cinematographer and The International Photographer is most grateful for his contribution to this issue.





Everyone everywhere in Kodak Park is enlisted in an unrelenting fight against seemingly inoffensive enemies—a speck of dust too small to be seen, a variation of temperature, a dim ray of light entering where it does not belong. The rolls of brilliant white baryta coated paper coming off of this calender must be physically perfect and chemically pure, so as to take the extremely sensitive emulsion later applied. Purity and precision are imperative, for a microscopic speck of dirt might later cause an unwanted freckle on some photographic portrait or spoil a snapshot of a child in some entrancing pose.



Good Housekeeping—in Trainload Lots

(A Tribute to Kodak and to the Immaculate)

"There is more to any industry than cogwheels and chemistry; than energy and engineering, than money and markets."

(From The Solka Age, Published by Brown Co., Portland, Maine)

WITH these modest printed words, visitors at Kodak Park in Rochester, New York, are introduced to an industry in which machines and humans work together to produce the magics of photography. One sees projects and products almost literally "hewn from the future by research and far-sighted planning," and stands in awe of the unbelievable orderliness and easy quiet with which this huge plant operates.

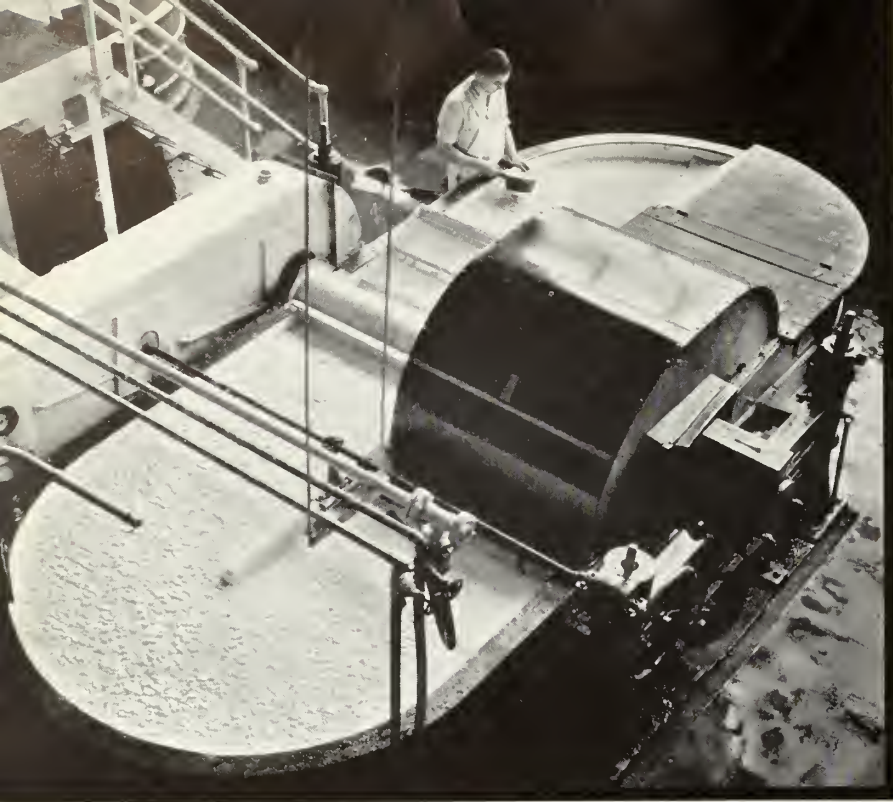
The Eastman Kodak Company's largest factory—composed of eighty buildings on four hundred acres of land—is unique in its extreme cleanliness on a large scale. The personnel of many thousands, unmeasurable brain power, abundant resources are concerned in an unrelenting fight against the photographic industry's enemy—impurity. A speck of dirt too small to be seen, the slightest variation in temperature, a ray of light penetrating a darkened room might cause loss and trouble and, most important, a momentary deviation from the uniform quality of product that users of photographic materials have learned to count on.

This, then, is the story of a great industry largely motivated by an extraordinary purpose—to avoid dirt or contamination in any form that could affect film or photographic paper.

Purity of raw materials is no more necessary to perfect photographic products than cleanliness of surroundings and a well-regulated manufacturing technique. Everything in the House of Kodak, therefore, is immaculately clean. Exhaustive testing of raw materials and of materials at every stage of manufacturing is a commonplace here.

The urge for purity begins with the surroundings of the plant, with the very air that lies over the buildings. It is found in the laundered clothing of workmen, in the frequent vacuum-cleaning of buildings, in the con-





Purity takes on a new meaning the moment raw materials enter the plant. The "beater" preparing the pulp to be made into photographic paper is lined with white tile; all parts are kept polished and spotlessly clean, and even the air is washed before it is allowed in.

stant sprinkling of the plant's paved streets, and in many related precautions that would surprise persons familiar with other industries that need to be less meticulous. Cleanliness, orderliness, exacting care—"good housekeeping"—yet withal an easy smoothness that impresses visitors as the acme of quiet efficiency—that is the composite picture carried away from this House of Ten Billion Pictures.

From Kodak Park a constant stream of photographic material flows forth: film to record the pleasures of family life and the growth of children; the medium for portrait photographers and commercial photographers requiring many different types of film and paper for their varied work; two hundred thousand miles of motion picture film annually; home movie film; x-ray film for diagnosis of human infirmities, x-ray film to reveal flaws in the structural materials of an exacting industrial age; photographic materials for photo-engravers, bankers, astronomers, aviators, draftsmen, detectives, experts in microscopic work and the men behind almost any other human activity.

Four



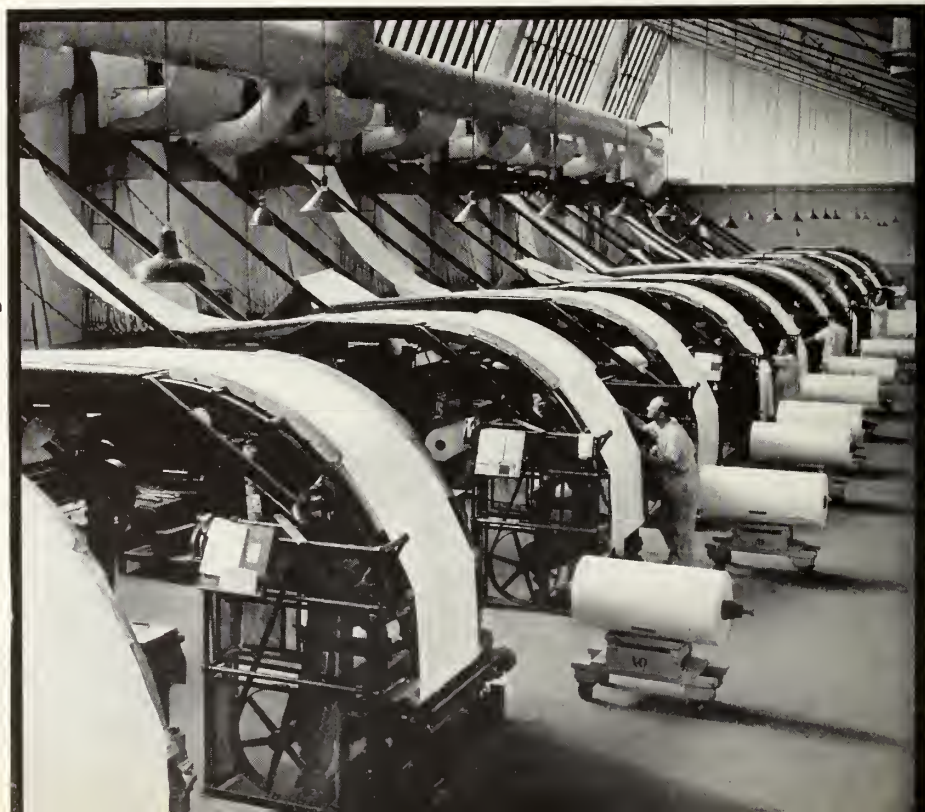
Photography could not retain confidence as an important medium if the materials were not entirely dependable. That is why Kodak Park is a battlefront against impurity.

"Good Housekeeping" as a term to describe Kodak Park should be construed in its larger sense. Cleanliness is only part of it—although the immaculateness of the House of Kodak would put the most fussy New England housewife to shame. "Good housekeeping" denotes orderliness, exacting care in every big and little operation in the involved processes of manufacture. The making of test-tube products in trainload lots requires care that reaches into the quality of every piece of machinery and every part, every tool that the workmen use, the clothing they wear, their bodily health, their peace of mind, the very air they breathe.

Three switch engines operate in Kodak Park to shuttle freight cars hither and yon. Dust and smoke are taboo on the grounds, so these engines burn neither coal nor oil. Their boilers are partly filled with water; then super-heated steam from the power house is forced into the boilers under pressure. The water generates into steam—and the boilers are charged for several hours' work, with no smoke nor any cinders to escape.

Then there is the air-washing process. Air is purified before it

Baryta coating which is being prepared in this kettle is about the "whitest white" that the eye and the chemist can conceive. It is applied in varying number of coats depending largely upon the surface desired. In picture 3 you see the paper—now coated—emerging from the long drying tunnels.



enters the buildings—a process common enough—but at Kodak Park the air ducts themselves are kept spotless and fleckless. Their inside walls are frequently flushed and polished by men in sou'westers, armed with hose and polishers. Not an atom of dust is permitted to linger in the ducts.

Why all this cleanliness, this emphasis on "good housekeeping"? Surely, on such a large factory scale, this can be no idiosyncrasy of an over-careful management?

Imagine a roll of motion picture film in a camera "shooting" a scene that may have required a small fortune for preparation. Then imagine what Kodak Park has made unimaginable—dirt or grease on the film, that would spoil the scene.

Conjure up the photographic records of astronomical explorers. A speck on the film might put an extra star in a significant cluster.

Any cartridge of amateur photographer's film leaving Kodak Park may have important work to do. It may get a rare opportunity to record a baby's fleeting smile.

Of such things, large and small, the world's affairs are made. Kodak Park's job is to assure that photographic materials are ready without flaw to take the picture, whatever the job on hand.

With a look at photographic paper, let us begin an inspection of Kodak Park. Prints made from nega-

Though this huge duct carries nothing but purified air, it is nevertheless flushed and polished.



Huge ducts carry washed and conditioned air within the various production buildings of the plant.

tives—by way of explanation—are on a paper base, coated with the sensitive silver "emulsion."

Certain chemicals in the content of ordinary paper would ruin the photographic printing materials. Copper and iron, for example, could destroy the photographic effectiveness of the emulsion if a trace of them appeared in photographic paper.

Not only, therefore, are extreme precautions exercised to keep impurities out of the photographic paper in the making—precautions evolved from years of experience—but also the system of tests to assure that the standards are met is very extensive. Not only chemical tests, but actual photographic printing tests as well are applied to every batch of paper and some parts of this testing program are carried out at every stage of manufacture—the raw material, the wet band of new paper as it first gains strength enough to hold together, the finished paper, the paper after sensitizing and the paper at points in between.

Every department concerned with making photographic paper at Kodak Park—and the same thing applies to film—has its independent control laboratory, manned by alert chemists whose job is to detect and arrest any chemical stranger intruding into the sacred purity of the materials. They take nothing for granted at Kodak Park—not even the o.k. of their fellow chemists in other departments. One can't get away from that struggle for purity.

Paper making in the House of Kodak begins on a small paper machine, where test sheets are made. These sheets must cope successfully with the tests before major production on any given paper-making job can commence. If the test paper stands up, production begins on the larger paper making machines.

Yet, even when production jumps from the small laboratory basis to full-scale manufacture, the purity-control setting is present. The digesters are made of glazed white brick. Pipe lines are similarly protective. The water is rigidly purified after being piped from the undisturbed depths, far from shore, of Lake Ontario. The workmen's clothing is spotless. Their hands are

(Turn to Page 18)

A Cameraman Among the Lepers of the South Seas

By MAX DUPONT



WELL, one would think that in the South Seas a fellow would dream more than work, but such is not the case unless the man has the making of a beach comber. In fact, most of us work harder here than we did in the States. We get up at sunrise. Every business starts at six o'clock except the Government.

My studio is not large, but I do enough business to keep the pot boiling. In this hot climate photographic process means about twice the work it would in a temperate climate.

Everyone who orders a portrait wants to look like an Adonis or Greta Garbo, so you can see it is not so easy. It is not possible for a white man to live like a native or he will land in the hospital or go back to good old U. S. A.

The nights here are delightful, so I do not go to bed until midnight after having put in a good day's work for very little money, but being one's own boss is worth a million. It eliminates the suffering of being a "yes" man, a specimen that you don't find out here.

From time to time I have to grind a camera for different people who blow in for a picture. Recently a French Government Mission, scientific and medical, headed by Professor Dr. Le Mee, of Paris, came to make an intensive study of the dread disease of the lepers. The doctor conceived the idea of getting me to shoot a picture of the life of these poor souls from childhood to death. To tell you the truth, I tried every excuse I could think of to get out of it, but being a cameraman I had to go "For science, you should risk anything"—etc.—the usual stuff.

Well, the first day we went into the secluded reservation of the lepers and if I could have vanished gladly would I have done so. In my life I have seen many things, from cyclones to war, etc. but this last experience took the bouquet. Dante's *Inferno* is a joke compared to the visions you get there. The pity you feel for these poor people is indescribable; then there is the fear of being contaminated. You shrink from it and then realize it is worth the risk to be able to help in any way the betterment of the situation of such human wrecks. The wonderful thing about them is how they conduct themselves so that one never gets in contact with them.

They were so happy to have us among them and most anxious to do all they could to help and follow instructions, even as veteran actors, and with no back talk.

It is surprising to see how some of them are apparently intact, even healthy looking. Some of the girls are

very beautiful Polynesians and you will see them sitting next to a lion-like monster (the lepers at a late stage often have that appearance). Without blinking an eye the girls will talk to him and kid him as though he were a Beau Brummel. All of this to our astonishment.

We saw only a few who were very sad looking. Most of them laugh and talk like children. The life there continues like an ideal little city from the chief of the population to the policeman. Yes, there is a jail, too. Love affairs go on just the same, petty jealousies; rank still exists—the rich and the poor. But they are all equal to that dread disease.

We took very important camera observations from a technical and medical standpoint, which will be of great assistance to the doctors. We stayed over two months making the picture and the wonder to me is that I am not pickled like one of the poor fish you see in a jar. After all our bathing we put ourselves into a solution of Formal acid—and we sure made it hot, I tell you—then a rinse in alcohol.

I have received news from Paris that the picture is of tremendous service in the medicinal centers. I hope they show the picture to raise funds for the leper. They need it, not so much that they need money, but a few little luxuries could do much to help and cheer these human wrecks. It would mean not only a material treat, but a moral consolation, to know that people thought about them, which causes them more happiness than anything else.

The leper does not feel the burn of fire, the coldness of ice, the prick of a needle. As the disease advances they suffer greatly from fever and chills. They are very active and energetic and they are wonderful housekeepers—their little bungalows are spotless and so are they. They love music and a motion picture show is paradise to them (producers take notice). They are tractable patients and do all they can to cooperate with the doctors.

The disease is not hereditary. We saw many examples and proofs of that and we were informed that during the decade just past the malady had somewhat diminished.

I have been thinking that if someone would start a campaign in the studios to get them to send pictures of stars, any kind of used articles, cigarettes, candy, or anything at all, even though not of great value, the attention would give them a great deal of pleasure. Any such gift should be addressed to the Hospital of Oro Fara, c/o The Nurses, Tahiti.

DON LEE TELEVISION SETS NEW RECORD

At 9:00 p.m., Saturday, May 26, the Don Lee Television transmitters W6XS and W6XAO had transmitted exactly 6,000,000 feet of motion picture film over television, according to Harry R. Lubcke, Director of Television, for the Don Lee Broadcasting System. Transmissions have covered a period of three and one-half years.

In this record television footage, those who have made or purchased television receivers have looked in on such Paramount features as "Blonde Venus," "The Way to Love," "A Lady's Profession," "I Love That Man," "A Bedtime Story," "Trouble in Paradise," "The Eagle and the Hawk," "Woman Accused," "The Girl in 419," "Three Cornered Moon," "One Sunday Afternoon," and many others. Paramount shorts, such as "Hollywood on Parade," Paramount Pictorials, "Hot and Cold Chills," "Stuff on the Ball," "Building Winners," "The Wonder Girl" and "Sporting Melodies," as well as current Pathe Newsreels, have made up the lookers' fare.

Ray Flinsky, six miles south of the transmitters, reports seeing dancing girls, a display of the latest in women's shoes, and a toboggan sled ride in the Pathe Newsreel of May 2, 1934.

L. G. Gilbert, 27 miles east of Los Angeles, in the City of Pomona, wrote on May 17th to say that one of the characters in Paramount's "This Day and Age," wore "pinch on" glasses on his nose. Mr. Gilbert has been an interested looker for over a year, having received his first television image in February, 1933.

Both of these lookers have built their own equipment according to instructions that were published in the March, 1934, issue of the "International Photographer."

The Don Lee stations transmit television images nightly, except Sunday, from 7:00 to 9:00 p.m., and on Monday, Wednesday and Friday morning from 9:00 to 11:00 a.m., W6XS on 2,800 kilocycles (107 meters), and W6XAO on 44,500 kilocycles (6¾ meters).

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IN THE REALM OF TRICKS AND ILLUSIONS

(Associate Editor of *International Photographer* and Member of the Faculty of the University of Southern California as Lecturer in the Department of Cinematography)

By EARL THEISEN
Honorary Curator
Motion Pictures
L. A. Museum

AIRPLANE crashes, train wrecks, under-sea shots, volcanic eruptions, are made by the trickmen of the studios. They are part of the motion picture. Without them pictures would lose a valuable vitality. From the very first the industry found it necessary to resort to effect and trick photography.

W. K. L. Dickson, who worked with Edison to bring the motion picture into being, used effect photography. As early as 1894 Dickson employed double exposures and masking in the then crude motion picture. One picture, "The Banjo Player," shows a man playing a banjo and several of his own heads watching him play. The heads are lying on a nearby table.

Since the pictures of this period were largely newsreels and topical pictures, much of the news that was presented on the screen was simulated through miniatures. Because the history of trick and effect photography is too long for the present article, and because this has been covered to an extent in "The History of Newsreeling," in the *International Photographer* of September, 1933, we won't elaborate on early miniatures. At best they were very crude, but they satisfied the particular needs of that time.

Trick and effect photography came into use about 1910, at which time there was a general trend towards a wider narration in picture technique. It became necessary for the cameraman to employ various dramatic and technical devices to expedite the screen story. During this period, such men as Joseph Dubray, G. W. "Billy" Bitzer, A. S. Howell and Eddie Kull were actively interested in the perfecting of such devices.

Dreams and visions made by "double exposures," "lap dissolves," etc., were widely used about 1910. These and other effects were utilized to great extent in the Pathe and Biograph pictures.

George Melies had used these processes as early as 1900. Melies, by the way, may be considered the dean of trickmen. His pictures almost entirely depended on trick photography. The majority of his pictures were made by stop motion. That is, he photographed the picture frame by frame and by this method created such effects as the furniture and other inanimate objects moving about. One particularly notable effect used by Melies was in "The Clown," which consisted of a clown building up a dummy piece by piece. When completed, the dummy suddenly came to life and had a very active fight with the clown.

The "mask" or "matte" process dates back before the advent of motion pictures. On April 14, 1874, C. M. Coolidge was granted patent No. 149,724 for a process of making composite prints by masking. It was, of course, designed for still photographs, with particular reference to combining cartoon pictures.

According to present records, the first patent on a mask process designed for motion picture use was issued to J. E. Garrette on October 19, 1915, patent No. 1,156,896. The patent covers the combination of a lantern slide and

motion picture film. The traveling mask used in motion picture work was first patented May 15, 1917, by R. V. Stanbaugh, patent No. 1,226,135. Stanbaugh's system consisted of threading in the camera a traveling mask, together with an unexposed film. This process was primarily designed for advertising, in cartoon form. The cartoon action was photographed and then it was used as a mask to which the names of the advertisers were added by super-imposition.

There were many other mask patents, notably the one granted to Norman Dawn on June 11, 1918, No. 1,269,061. This process used photographs of the foreground, which were used as a cut-out mask. The background of a desired scene was then added. A very complete resumé of the patent literature may be found in the *Journal of the Society of Motion Picture Engineers* for April, 1933, Volume XX, No. 4. "Composite Photographic Processes," by H. D. Hinline.

The credit of perfecting and the commercializing of the "mask" or "matte" process goes to Frank D. Williams. His first patent that came into wide use was issued on June 23, 1918, No. 1,273,435. The Williams' process consisted of photographing against a black background with a Bi-Pack that gave a transparent negative and a foreground action. In the Williams' process, by using this mask made of the foreground action, he was able to add any desired background from any portion of the world. The foreground action, in the form of a matte, was then used as an intermediate step in introducing later, by process, the people in the foreground.

William previously had been interested in motion picture process work in connection with the Essanay in 1910. The first experiments were made in the form of silhouettes of camels crossing a desert. His process at that time, could not more than make shadow silhouettes in the foreground. He made the foreground negatives of the camels against a white background, which, when intensified, were double printed over any desired background.

By 1912 he had developed the process where he could add an image instead of just a silhouette in the foreground. Williams introduced and perfected many devices in the field of process work. In 1919, he was the first to use, according to present records, a double magazine. Prior to this time, he had been using a single magazine and had threaded double films in his camera. By using the single magazine, he could only thread in 20 or 25 feet of film, because it was necessary to roll the two strands together. This made one of the strands longer than the other.

While with Sennett, he used a Bell & Howell camera with registering pins.

The Williams' process, though used earlier, was first used commercially about 1922. His first picture was the Famous Players Lasky picture, "Beyond the Rocks," starring Gloria Swanson, released on May 14, 1922.

Williams, in the last three years, has applied for a number of patents which greatly improved his process. His last patent, applied for in 1932, makes it possible to photograph with bipack panchromatic emulsions. Through the use of panchromatic emulsions, it is possible for him to photograph colored objects in the foreground.

Williams had been using an orthochromatic emulsion

in a bi-pack form, which would not permit him to photograph black and white objects over a background. Now it was possible, through the use of a panchromatic emulsion, to photograph both black and white, as well as any colored object.

Frank Williams had first become interested in panchro-

out every portion of the setting except the portion where ing out any undesirable portions of the set. By this pro- the horsemen can be seen riding. That portion is left clear. When the camera records the horsemen riding along, it also records them with a background of castle and mountains, the painting and the riders are blended



Top—By Ralph Hammeras, is a miniature barnyard. Center—Snow scene in miniature. Right—A miniature landslide such as is used in earthquake scenes, etc. Center—Showing a miniature plane landing. Right—George Teague and his "rear projection" equipment. The picture is projected to the window which represents the side of a traveling train.

Lower—Showing how a glass shot is made. No. 1 Left—Is the scene photographed from real life. No. 2 shows the painting and real life scene before they are correctly balanced and No. 3 is the final scene as shown on the screen. Courtesy Willis O'Brien and George Teague.

matic emulsion in 1918. On September 1 of that year, Fox released the Annette Kellerman "Queen of the Sea." Sequences of this picture were photographed with panchromatic emulsion. Then panchromatic film was only sold on special orders. It was necessary to order 8,000 or more feet of film, which was made in 200-foot rolls. The panchromatic film would only keep two months.

It is of interest to note that panchromatic emulsion was used by the experimenters in color. For experimental purposes, Williams had bought 2,000 feet from a color experimenter. He used this type of film for a number of later pictures.

In addition to the "mask" process, there are three other processes—the projection, the color separation, and the glass shots.

The glass shot is used for adding atmospheric scenery, while automatically blocking out other undesirable portions of a set. As the term implies, glass is used, on which is painted a picture. For instance, one may see a motion picture setting with high mountains and a feudal castle in the background. In the foreground are some horsemen riding. The general method of making such a scene is to set up a plate of glass several feet in front of the camera and paint the pictures of the mountains and castle on the glass. The painting of the mountains block

realistically. The painting serves the purpose of block-cess, it is not necessary to construct castles or other large sets.

Walter L. Hall perfected this process for successful motion picture use. He began working on it during the filming of the D. W. Griffith "Intolerance," in 1916. In its first form, glass was not used. Instead the paintings were put on compo-board, then the outlines of the painting was cut away. This painted matte was set up in front of a camera and then in the background was built the remainder of the set for the action of the players. Of course, it was not as simple as that; to make a glass or a matte shot of this kind requires artistic skill and particular ability in lining up the perspective of the foreground picture with that of the constructed set. Glass shots are used in practically every picture today. Hall patented the process on March 29, 1921, as No. 1,372,811.

There had been earlier patents on this process; in fact, William Callcott was granted a patent on December 13, 1864, No. 45,449. The Callcott patent, however, refers to a stage illusion and was not for photographic purposes.

On March 5, 1912, A. Engelsmann was granted patent No. 1,019,141 on a system of combining actors and the glass plate. The glass was placed in front of a painted drop.

On December 11, 1923, D. W. Griffith was granted patent No. 1,476,885 on a process using a painted screen with a hole cut in it. It was designed to combine both the screen and the actors, who were photographed through the opening.

Ralph Hammeras, now with Fox Films, was granted



Showing the set-up on making a tricky plane landing shot in miniature. Courtesy Vernon Pope.

glass shot patent No. 1,540,213 on June 2, 1925.

P. Artigue's patent No. 1,742,680, issued January 7, 1930, should also be mentioned. This patent and the other Artigue patents, however, had very little use in the motion picture.

There is another type of glass shot developed by Eugene Schufftan. This process, patented on January 12, 1926, No. 1,569,789, covers a system of photographing through a transmission mirror. This mirror is set up at an angle before the camera and is partially silvered so that the camera eye can see through the mirror. In this manner the background of a painting could be seen through the mirror, while the actors would be photographed simultaneously from the silvered portions of the mirror.

There are other patents, too numerous to mention.

Another quite interesting system is known as "color separation." The color separation method is much too technical to attempt explanation. It was first patented by Dodge and Carroll Dunning, and Roy Pomeroy.

The first Dunning patent, No. 1,613,163, issued January 4, 1927, to C. D. Dunning, covers a method of combining traveling background scenes into sets. By its use foreign scenes can be introduced into pictures without leaving the sound stages. Suppose a picture called for a taxi going down a street in Paris. To get this shot, the studio would locate from a film library, a suitable motion picture of the Paris street. They would also locate a French taxi, which would be placed on a parallel in front of a special bluish colored background. The players would sit in the taxi, which would be lit with an amber yellow light. The camera then records both the background and the taxi in which the stars are sitting. By a combination of the amber light on the taxi and the blue background, the players and the taxi seem to be riding down the French street. Even though the taxi never moves, it is realistically blended in this French street scene.

The general method of doing this consists of dyeing the French street scene a special amber color. It is then threaded in the camera in contact with the negative film. The amber light on the taxi passes through this dyed image, while the blue light of the background records the street picture.

This process was first used in the F.B.O. picture, "Silver Comes Through," May 29, 1927. That this process puts a punch in pictures is judged from the fact that when this picture was released, difficulties were encountered from the censors in one of the states. That was because Silver, Fred Thompson's horse, was seen to be jumping off a traveling train. Of course, he had not jumped off the train, but had been made to seem to do so. When this was explained to the censors, they were appeased.

The history of color transparency dates back to June 25, 1907, when F. J. Deschner was granted patent No. 858,162.

Another patent which had extensive use was the one granted to Roy Pomeroy on June 12, 1928, No. 1,673,019. There were a number of patents covering such processes throughout the intervening years.

The projection process dates back to November 22, 1892, when F. Seymour patented No. 486,606, a process for combining a projected image and an actor. It was designed to use stereopticon pictures into which was added the picture of a person. This process was again patented by R. M. Hunter on August 28, 1900, as No. 656,769.

A patent issued to H. Sontag, February 18, 1913, No. 1,053,887, was also issued for the purpose of introducing actors into a projected scene. In the interim there had been a number of other patents along similar lines. They were intended for still photographic processes.

The projection process, popularly known as the "rear projection," is designed to introduce background and atmospheric motion pictures around the players on the sound stages. The projector is placed in back of a transparent screen and the players enact their roles in front of the screen. The camera then photographs both the actors and the motion picture background projected on the screen. This process has particular use in introducing foreign scenes in the pictures made on the Hollywood sets. The projection process first came into popular use with the advent of the sound motion picture, when it became necessary to confine the making of pictures to the sound stages.

A great number of people contributed to the successful achievement of this process, among them being Ned Mann, Frank Williams, L. S. Brainard, J. S. Dawley, Ralph Hammeras, Willis O'Brien and George Teague.

George Teague is credited with many contributions to the projection process. In collaboration with Willis O'Brien he started a series of tests in 1927. In 1930, in the making of the Fox "Just Imagine," the process was used commercially for the first time. There had been many tests prior to this; however, they were not entirely successful. With the advent of the sound picture, the synchronous motor, the high intensity arc lamps, the projection process was finally realized. It is used in practically every studio today.

Another medium used by the trickman are the miniatures. Through the use of miniatures, it is possible to bring to the screen, train wrecks and airplane crashes with more realism than it is possible to photograph using the real thing.

The dean of miniature men is Willis O'Brien. Willis O'Brien started in San Francisco in 1914. His first picture, a single reeler, "The Dinosaur and the Missing Link," was made for Edison at that time. In 1916 he made five complete pictures in miniature. In 1918 he made what was perhaps the best of the miniature pictures until that time. It was "The Ghost of Slumber Mountain." In 1924 he made "The Lost World." It was one of the biggest pictures made in miniature, prac-

tically the entire footage being composed of miniatures. Recently he did "King Kong." In "King Kong" the miniature ape, which was only 18 inches in height, was made to resemble a mammoth pre-historic creature of about 30 feet. The backgrounds in this picture were largely introduced by means of the glass matte or the projection process. Through a skillful use of perspective and optics in this picture, he made a miniature of about 18 inches seem to have a full size person, Fay Wray, in the miniature's hand and the person seemed no larger than the ape's thumb. Willis O'Brien also had birds flying through the sets, had miniature planes flying, and had this ape in combat with other prehistoric animals. They were all in miniature.

Other miniature makers prominent today in the studios are Harry Reynolds at Paramount and Ralph Hammeras at Fox.

In summarizing, it is interesting to note that the trick and effect artists of the motion picture deserve far more credit than they are given. It is through them that the motion pictures have scenes that otherwise could never be brought to the screen. It is through them that an added realism is gained. They are the people of the motion picture whose results are seen on the screen, but who never are given credit. That is because of the fact that the motion picture producers are selling romance and credit to these men would detract from the realism of romance. Throughout the history of the motion picture, this group of men have been called "crazy as a loon." They are always far ahead of themselves and they were always far ahead of the times. Now, for instance, "nuts" are working on improvements that won't be used for years. Williams tried to put over his traveling matte in 1915 and 1916, but he was told it couldn't be done. When George Teague tried to use a motor for running the camera in 1917 he was told it would cause static, and so on endlessly.

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E. Leitz, Inc., 60 East 10th St., New York City is announcing a new autofocus enlarger for miniature negatives known as the FOCOMAT. It resembles the popular VALOY Enlarger, and accommodates all small negatives up to 3x4 cm. The big feature of the FOCOMAT is the autofocus arrangement by means of which enlargements from 1½ to 10 diameters can be made with the full assurance that the image is in absolute sharp focus.

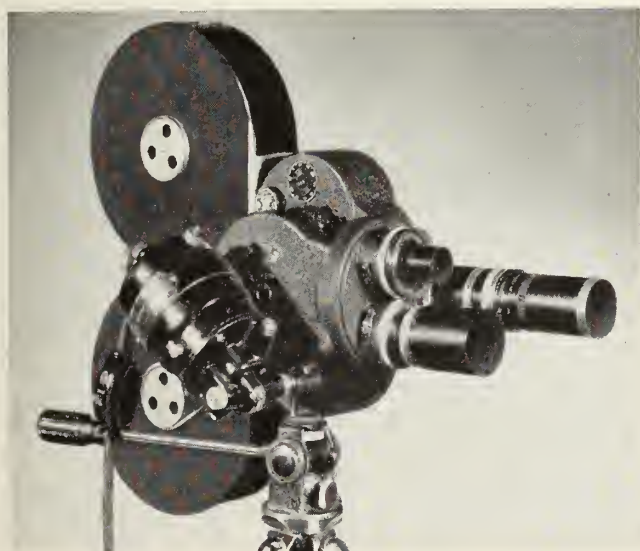
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There are only two positions for the enlarger supporting arms which carry the lamphouse. These are indicated by two holes in the upright pillar. The top one indicates the position for the enlarger when the standard paper easel is used, and the lower one for instances where no easel is employed.

The ease and certainty of the autofocus enlarger is well-known, and miniature camera devotees will be glad to know that at last there is such an enlarger incorporating the special optical system most practical for their tiny negatives.

Literature on the new FOCOMAT may be secured by writing to E. LEITZ, Inc., or better still, visit your local dealer and see this new creation.



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DANTE'S INFERNO HAS NOTHING ON THIS!

By PAUL R. HARMER

KRAKATOA—a motion picture of 3,000 feet in length and accorded the honor of being the most unusual picture of 1933, released by Educational and brought out of Java by Joe Rock, one of the keenest minds and most wide awake Independent producers in the motion picture industry. To those who have seen the film, or will see it, a few words need to be said about the history of the great volcano, Krakatoa.

Little of the early history of Krakatoa is known except that it was in eruption in 1680. This volcano is located on an island in the Straits of Sunda, about half way be-

that night; the houses trembled from subterranean violence—but this was only a rehearsal for the fury to come. By ten o'clock the next day, August 27, 1883, the real performance began. An overture consisting of two or three introductory explosions was succeeded by a frightful convulsion which tore away a large part of the Island of Krakatoa and scattered it to the winds. In that final effort all records of previous explosions on this earth were completely broken. It was this supreme effort which produced the mightiest noise that, so far as the writer can ascertain, has ever been heard on this globe. Thousands



Top, Left to Right—Shot from an airplane about 300 feet from the periphery of the main disturbance. Still by J. H. Bekker; Long shot of the demon volcano Krakatoa in eruption. Column of steam, flame, smoke and lava approximately four miles high. Still by J. H. Bekker; Medium close-up showing the explosive force of the volcano. Shot from a boat at 800 feet distance. Note tidal wave at

base of cone. Still by J. H. Bekker. Bottom, Left to Right—A shot from boat showing part of new cone on right. Still by J. H. Bekker; Note new cone on left. A long shot from the boat showing the unimaginable power of the explosive force of incandescent lava. Still by J. H. Bekker; A shot from boat at a distance of approximately only 500 feet. It is an explosion of lava. Still by J. H. Bekker.

tween Java and Sumatra. The eruption of Krakatoa in 1883 was the most violent outburst of nature ever recorded.

In May of 1883 the first eruption did not threaten to be a serious one. The people chartered steamers and ran excursions to the volcano, where a vast column of steam poured forth, accompanied by a terrific noise, from an opening about 90 feet in width.

Earthquakes were felt with increasing violence and fine dust clouded the sky. Great rumblings were heard, the sea was disturbed and the population was annoyed over an area as large as the British Isles. As the wind was unable to carry the dust away as fast as Krakatoa threw it up, the atmosphere became charged with suspended particles. A pall of darkness hung over the adjoining sea and islands. So dense was this suspended dust that at midday a darkness as intense as midnight prevailed.

On the night of Sunday, August 26, 1883, the dust clouds in the Straits of Sunda, now thicker than ever, were only occasionally illuminated by lurid flashes from the volcano. At Batavia, 100 miles away, there was no quiet

of nearby inhabitants' ear drums were broken and four hours later the sound was heard and recorded by the coast guard on the Island of Rodriguez, a distance of 3,000 miles west. In ten hours the sound was heard and felt in Berlin, Germany, and the shock was felt clear through the earth.

The air in Britain tingled with the volcanic impulse, while in Central America the wave impulses, coming around the earth in opposite directions, met. Barometers all over the earth vibrated and were disturbed for five days, violently at first, then gradually becoming normal.

The dust of Krakatoa encircled the earth in thirteen days. The marvelously beautiful sunsets which prevailed during the autumn were caused by fine dust hurled into the upper atmosphere, where it remained suspended for many months, finally becoming gradually diffused over the earth.

Geologists estimate ten cubic miles of rock and earth were hurled into the air. Stretches of water that had an average depth of 117 feet were so filled up as to be no

(Turn to Page 19)

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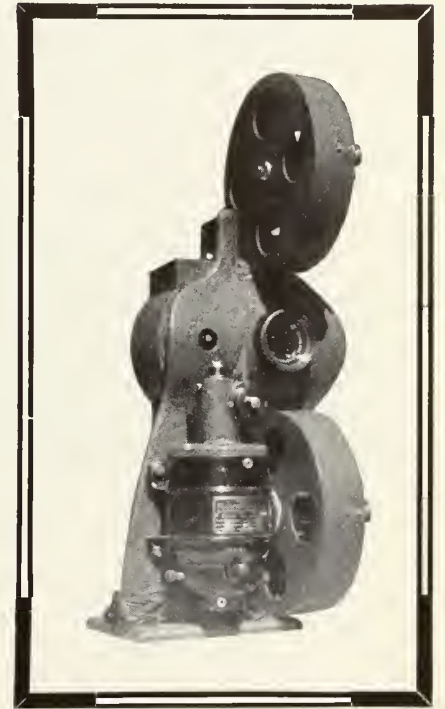
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AROUND THE WORLD ON LOCATION

By ROBERT W. MILLER

RATHER an uninteresting title for a very interesting trip, but after all, that's the way one feels about these jaunts when he gets back to the home soil again. To go back a few months, six of us left Hollywood for Vancouver, where we took the "Empress of Japan" for the Orient.

Our party consisted of Chester Bennett, well known in Hollywood film circles; Mrs. Nell Emerald Beattie, English authoress; Ward Wing, Hollywood director; his wife, Mrs. Lorie Bara Wing; our old friend and ace of good fellows, Paul Perry, in charge of photography,

and only a few sleepy faces peering out of shaded windows, the latter wondering, no doubt, what those crazy Americans were trying to do when anyone with good sense was taking a siesta.

Personally I have a great regard for the French custom and admit that even 3:00 o'clock was a little early to start out. I am wondering what would happen if something like that were tried in Hollywood.

After about three and one-half weeks of shooting, in the city, on the river and in the jungles, we completed our thirty thousand feet of background and were ready to



Left to Right—The King of Cambodia goes for a stroll. (The palanquin bearers do the strolling.) Center—The Perry-Miller party at the main gate of Angkor Wat, the famous ruined city. Right—The King of Cambodia takes his royal elephants for a run around the palace grounds.

sound, etc., and "yours truly" as his assistant, second and still man.

After a delightful trip we reached Hong Kong last January, where we found it necessary to wait ten days for a French ship to take us to Saigon, our destination. Arriving at Saigon, we were again forced to wait for some few days while the French officials satisfied themselves that we only intended to make motion pictures.

Our reason for going to Saigon and French Indo China was to obtain background shots for the picture, "Indo China," which is being produced by Metro-Goldwyn-Maver. Here we shot some thirty thousand feet of negative, covering some of the most interesting subjects I have ever been privileged to work on. We were very fortunate in arriving there shortly before Chinese New Year. The country is peopled not only by Chinese, but by Anamites, Cambodians and Tamals, the first two closely related to the Chinese people.

For three days before the Chinese New Year the native markets are crowded with all nationalities. It was in such a setting as this that we made our opening shots for the M-G-M picture. Saigon, itself, is a city of some two hundred thousand, of which around forty thousand are French, the rest being Chinese and native. At the time we reached there only eight other Americans were in the city.

Ideal weather conditions prevailed all the time we were there, and while we always had the heat of the tropics, it was much drier than Manila, Panama and other Southern countries.

One quaint custom the French have was brought, rather forcibly, to our attention the first day we started to shoot. Our guide and interpreter, Monsieur Jack Nodo, informed us that we would have to stop shooting at 11:30 a.m., as it was time for lunch. When we asked him what time he would be ready to start in the afternoon, he informed us that he would be back at our hotel at 3:00 o'clock.

Not wishing to lose quite so much time in the middle of the day we tried starting out without our interpreter around 1:30, but found the streets deserted, stores closed

unlimber our color camera. Our intentions were to make several shorts in this vicinity, using the bipack process. We used a Bell & Howell camera, fitted with Fearless movement, and of this combination I cannot speak too highly, as we had absolutely no trouble of any kind. As we were preparing to leave Saigon for the interior we had the pleasant surprise of meeting Duke Green and Thad Brooks, of Technicolor, who are working with the Marquis de la Falaise on a jungle picture.

Arriving in Phnom Penh Cambodia, we were very fortunate in being in time for the King's birthday party. While Cambodia is under the protection of the French the King still holds court and is highly thought of by all his subjects. One morning when Paul and I were setting up our cameras we found ourselves more or less hampered by the eager crowd of natives. The Cambodians are very polite, but like all children, very inquisitive.

One chap in purple pajamas was a little more persistent in getting closer to my camera than the others. I finally found it necessary to escort him some little distance away and in good old American slang told him to "STAY PUT." A few minutes later I was tapped on the shoulder by an official looking somebody and informed that the gentleman in purple pajamas was none other than the king himself. When I could get up nerve enough to look his way I found him grinning at me and snapping my picture with a small hand camera that he carried. Learning that he was an enthusiastic amateur photographer, I felt that all had been forgiven in the interest of art.

One of the interesting events of the birthday party was the feeding of fifty-one Bonzas, or yellow robed Buddhist priests. There are many Buddhist temples in Cambodia, and literally thousands of the male population of Cambodia take up the priesthood for at least part of their lives. In a few months' time the King's eldest son is to enter the priesthood for a period of a year.

It is customary for a certain number of these Bonzas to receive food from the King's table. The number is determined by the number of years the King has lived.

(Turn to Page 20)

Triple DISTINCTION

EASTMAN Super-sensitive Panchromatic Negative has a three-fold distinction. Its introduction has led to more significant advances than any other film ...excepting only Eastman's *original* motion picture negative. Under the expert hands of the cameraman it has in the last three years photographed a great majority of the biggest screen hits. And...because of this record of accomplishment...it now enjoys by far the widest preference among all motion picture negative films. Eastman Kodak Co. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-sensitive*
Panchromatic Negative

"It was in fact a cameraman assistant who helped Edison bring motion to the picture, William Kennedy Laurie Dickson." — Terry Ramsaye.

THE CAM

Vol. I.

MONTHLY NEWS OF PRODUCTION

COLUMBIA CLIPS

By BOB TOREY

"BLIND DATE," directed by ROY NEILL—Al Siegler is Master of Cinemones on this one, with Jack Young as his operative cameraman and Al Keller and Walter Lackey assisting. Irving Lippman and his Dark Hazard cop the stills, Homer Plannette, V. E., is the gaffer, (V. E., my fledgelings, stands for Very Excellent); Buddy Coleman is Chief Heckler, otherwise called assistant director; Jack Wrenn nurses the props; Glenn Rominger garners the sound waves, and Jimmy Lloyd supplies the beef. Not the butcher, just the grip.

The cast boasts of (casts, my good people, ALWAYS boast. It is called PUBLICITY.) As I said, the cast boasts of Ann Southern, who can do a little special boasting because of her meteoric rise. Neil Hamilton, Paul Kelly, Joan Gale and Mickey Rooney. At least I believe it's Joan Gale. The three sisters, Joan, June and Jean confuse me. Ennihoo, Joan is a cute little breeze—a Gale after my own heart, if you'll pardon my sudden departure.

Fun was had the very first day. There was a pancake eating sequence that delighted little Mickey Rooney's heart. He, with others of the cast, were supposed to consume large stacks of delectable wheat cakes smothered in butter and syrup. (Pardon me while I gulp a bit.) It needed no directorial genius to get Mickey to put his whole soul into the scene. But the sequence took a day to complete and an entire day spent consuming pancakes is enough for any glutton. The final scenes were misery for the cast and the very next day they all organized to form an Anti-Pancake Society.

"TAKE THE WITNESS," directed by LAMBERT HILLIER. Joe August is Presiding Judge on this picture, but he's not on the bench. Dave Ragan is the pan and tilt expert, while Marcel Grand and Jack Andersen keep the key of the picture in C sharp. (In focus, you mugs—they're assistants.) I've patted Bill Feacher on the back so much I'll just say he's the still man this time; Jimmy Punter pours the juice in the proper spots (make mine about so-o-o tall, thank you); Eddie Blaisdell, the gentleman grip, directs the nail-swatting; Eddie Bernds gets away from Frank Capra long enough to snare the syllables; Wilbur Mack is assistant director and George Rhein keeps his eagle eye on the props.

The picture is a Jack Holt starring vehicle, with Jean Arthur, Shirley Grey, Sara Padden, and Nat Pendleton. Looks now as if the picture will run way over schedule—perhaps I'd better explain. Jack Holt just finished working on "Black Moon" and the African voodooism is still in his blood. Right in the midst of dramatic legal denunciations he breaks out into the weird "OOMBA-omba, OOMBA-omba, OOMBA-omba," native chant, to the utter consternation of all concerned. Yessir, that mammy-palaver gets in one's blood.

"WHOM THE GODS DESTROY," directed by WALTER LANG, finishes as I write. Looks as if the whole crew is going to take a vacation. They deserve it—they have been working for months without a rest. Brownie, officially known as F. M. Browne, is hot-footing it for the races at Indianapolis. His only time off in months, Brownie's going to make a fireman's holiday of it and take a camera along, "just in case." Ben Kline is also going to take a trip, but he won't announce the destination—probably afraid the studio will wire him to come back to work. Jack Russell, who got himself ensnared in those nasty old matrimonial meshes not many moons ago, will seize the opportunity for his first honeymoon and gallop off on a camping trip. Heigh-ho, love in a tent! I hope the pine needles don't point the wrong way. They'll probably all come back so weary they'll have to go right to work to get some rest from their vacations—an old idea, but only too true. Fred Dawson is the only sensible member of the camera quartet—he's going to take it easy and stay right here and work.

SUCCESS NOTE: *Freulich keeps up the good work!* Your little keyhole-pecker is happy to note that Henry Freulich is justifying the break Columbia has given him. Henry photographed two "Minute Mysteries" (not at all the same as 1 Two-Minute Mystery) with Lambert Hillier during the past month. He also handled the peep-sight on a two-reel comedy featuring Steelies former Hooges . . . I mean Hoolies steamy codgers . . . er, former Holv Stogies . . . well, ennihoo, they're the three mugs that knock you in the aisles what with their poking each other's eyes out, slapping of faces, tearing of shirts, and other odd little pranks.

At present Henry is Chief Cinematographer for Jules White, who is megaphoning as well as su-

R-K-O STUDIOS

"BACHELOR BAIT." Producer, Lou Black; authors, Victor and Edward Halpin; screenplay, Glenn Tryon; director, George Stevens; first cameraman, Dave Abel; operative cameraman, Harry Wild; stills, Fred Hendrickson; recording engineer, Clem Portman; film editor, James Marley.

Cast: Stuart Erwin, Rochelle Hudson, Pert Kelton, Skeets Gallagher.

"HAT, COAT AND GLOVE." Producer, Kenneth Macgowan; author, Wilhelm Speyer; screenplay, Francis Faragoh; director, Worthington Minor; first cameraman, Roy Hunt; operative cameraman, Eddie Pyle; stills, John Miehl; recording engineer, George Ellis; film editor, Ralph Dietrich.

Cast: John Barrymore, Barbara Robbins, John Beal, Sara Haden.

"WE'RE RICH AGAIN." Producer, Glendon Allvine; author, Alden Nash; screenplay, Ray Harris; first cameraman, Nick Musuraca; operative cameraman, Frank Redman; stills, Alex. Kahle and Oliver Sigurdson; recording engineer, John L. Cass; film editor, George Crone.

Cast: Marion Nixon, Billie Burke, Edna May Oliver, Grant Mitchell, Buster Crabbe, Joan Marsh, Reginald Denny, Gloria Shea.

"AFTERWARDS." Producer, Cliff Reid; screenplay, William Hackett; director, James Cruze; first cameraman, Harold Wenstrom; operative cameraman, Jos. Biroc; stills, Gaston Longet; recording engineer, P. J. Faulkner; film editor, Billy Hamilton.

Cast: Zasu Pitts, Slim Summerville, Ralph Morgan, Bruce Cabot, William Gaxton, Huntley Gordon.

"FAMILY MAN." Producer, Myles Connolly; author, Salisbury Field; screenplay, Sidney Buchanan and Harry Hervey; director, John Robertson; first cameraman, Teddy Tetzlaff; operative cameraman, Russell Metty; stills, Fred Hendrickson; recording engineer, John Tribby; film editor, William Hamilton.

Cast: Richard Dix, Bruce Cabot, Barbara Kent, Erin O'Brien Moore, Edith Fellows, Leonard Carey, Dorothy Wilson, Shirley Grey.

"DOWN TO THEIR LAST YACHT." Authors, Herbert Fields and Lou Brock; screenplay, Marion Dix and Lynn Starling; first cameraman, Eddie Cronjager; operative cameraman, Al Wetzel; stills, Alex. Kahle; recording engineer, Hugh McDowell; film editor, Arthur Roberts and George Marsh.

Cast: Sidney Fox, Mary Boland, Sidney Blackmer, Polly Moran, Sterling Holloway, Ned Sparks, Irene Franklin.

pervising the comedy, "PAY DIRT." In this engaging little comedy George Sidney and Charlie Murray get on the trail of some gold; and Eastman makes a pretty penny too, in case you're interested. Fred Kaifer makes an appearance on the lot as operative cameraman on this picture. Freddie says this makes 13 days he's worked this year and he doesn't know whether to buy a yacht or take a trip around the world. Jim Goss and Roy Babbitt keep the scenery in focus—all that the actors don't eat up, anyhow. Howard Robertson is among the crew—he says that, as long as this is only a two-reeler, he won't hold out for being called Chief Illuminating Engineer, but will answer to the title of gaffer. George Cooper is the mixer. Tommy Flood is assistant director, and Al Becker is head grip.

That conscientious gentleman who starts 'em and stops 'em at Columbia (and don't be thinking about a motorman; I'm referring to the head of the Camera Department, Emil Oster) has been appointed by Sam Briskin to be Columbia's representative to the Silent Camera Subcommittee of the Research Council of the Academy of Motion Picture Arts and Sciences. A splendid choice it was, too. When Emil gets all that new bridge-work done I'll take his picture for you.

Joe Walker would have had a clean record of a month of leisure, if he hadn't had to show up for some retakes on the Grace Moore picture, "ONE NIGHT OF LOVE." I suspect Joe of angling for another electric clock! Of course George Kelley assisted Joe, Vic Scheurich was second cameraman and Eddie Kearns was his assistant.



The press having named the best dressed present the best dressed crew. This photograph of wires, split screens or perambulators.

Reading from right to left: H. JOHN FLIP, photographer and interrogator, (how many?) of "spots," and gaffer. HAL WALKER (seated), (what's holding us up?); MILTON KRAS, of the latent image on film; ADOLPH FREULICH, hunter, best boy and electrician; IRVING (upper of the camera.

On the extreme left is Adolph Menjou pictures, but to me he is the BEST PAID man

MISCELLANEOUS

Phil Tannura asks the CAMERAGRAM to extend thanks to all those good Hollywood folk who helped to make his stay in the Film Capital immensely pleasant and profitable. He is heading back to London to take up his work with Gaumont British.

Dan Clark, the man who made Tom Mix cinematographically famous, has returned from a journey of two months in Hawaii whither he went on a special mission for M. G. M. He is handicapped by almost constant rain, but cameramen have ways of overcoming little things and deluges.

Len Powers is doing some special shots for Romance Productions at Mack Sennett Studios.

Tom Galligan reports the arrival of the stork at the Galligan homestead, Hollywood, May 1. Both Mrs. Galligan and daughter are doing well and Daddy Galligan is the happiest cameraman in the industry.

Do you know that Lindsay Thompson is publicity photographer for the Columbia Broadcasting System?

Paul Perry post-cards us from Angkor Wat that he will write us a letter from Hong Kong. We'll be looking for it, Paul.

The redoubtable Lester Rowley, than whom they can't make any better still man, is looking longingly toward the bosky dells of Northern Illinois for that long wished for vacation.

Fred Archer, internationally known pictorialist,

ERAGRAM

"... It was another cameraman, Edwin S. Porter, who, years after conceived the notion that motion pictures might tell stories—and so he gave us the photoplay."—Terry Ramsaye.

FROM THE CAMERAMAN'S ANGLE

No. 6

E



ss, ctor, director and cameraman, we wish to
ma: at the Paramount Studios without the aid
ERER, operative cameraman, cinematographer,
OBETS, illuminating engineer, diplomat, focuser
director's assistant, caller of people and inquisi-
chie Cameraman, Dir. of Photog., or reproducer
turto (Earl Miller, Chief Electrician), fisherman,
RG, keeper of the slate, tape, chalk and oiler
gu He may be the BEST DRESSED man in
S picture.—(Caption by Otto Phocus).

R-K-O PATHE

"HE COUNT OF MONTE CRISTO." Pro-
ducer, Edward Small; author, Alexandre Dumas;
screenplay and dialogue, Harvey Thew and Harry
Henry; director, Rowland V. Lee; assistant, Nate
Wal first cameraman, Peverell Marley; operative
cameraman, Harry David; assistants, Charles
Levy, Lee Crawford, Don Green and Matt Kluz-
nik; special effects, Jack Robson; stills, Clifton
Mann; recording engineer, Vinton Vernon; film
editor, Grant Whytock; art director, Jack Schulze;
chief electrician, Lew Johnson; chief grip, Buzz
Gibb; chief prop, Martin Hershey.
Ct: Robert Donat, Elissa Landi, Louis Cal-
hern, Sidney Blackmer, O. P. Heggie, Raymond
Warin, Luis Alberni, George Caine, Irene Her-
vey, William Farnum, etc.

"VO HEADS ON A PILLOW." Producer,
M. Hoffman; author, Dorothy Canfield; screen-
play, Al. De Mond; director, William Nigh;
assistant, J. H. McCloskey; first cameraman, Har-
vey Leuman; operative cameraman, Joe Novak;
assistant, Jimmie Higgins; stills, Neal Harbarger;
recording engineer, Dick Tyler; film editor, Mil-
ton Johnson; chief electrician, Donald Donald-
son; chief electrician, Frank Levitt; chief prop,
Lew Ash.
Ct: Neil Hamilton, Miriam Jordan, Henry
Arnta, Hardie Albright, Loma Andrie.

es member of the faculty of the Art Center
Sch., Los Angeles. He specializes in Multiple
Printing, Photographic Tricks and Miniature Shoot-
ing, Landscape Photography, Equipment and
Malap, Basic Lightings, Posing, Individual
Physiognomy, etc. Will Connell is Director of
the Photography Department.

WARNER-FIRST NATIONAL STUDIOS

"HEY, SAILOR!" Author, Ben Markson;
screenplay, Al Cohn, Ben Markson and Earl
Baldwin; director, Lloyd Bacon; first cameraman,
Arthur Edison; operative cameraman, Carl Guth-
rie; assistant, Martin Glouner; stills, Cliff Kling
and Bert Six; recording engineer, E. A. Brown;
film editor, George Amy; art director, Adreas
Hartley; chief electrician, C. Alexander; chief
grip, Owen Crompton; chief props, Red Turner
and K. Malay.

Cast: James Cagney, Pat O'Brien, Gloria
Stuart, Dorothy Tree, Frank McHugh, Niles
Welch, Willard Robertson.

"MADAME DU BARRY." Original screenplay,
Edward Chodorov; director, Wilhelm Dieterle; first
cameraman, Sol Polito; operative cameraman, Al
Green; assistant, Fred Terzo; stills, Homer Van
Pelt; recording engineer, Al Riggs; film editor,
Bert Levy; art director, Jack O'Key; chief elec-
trician, F. Flanagan; chief grip, Harold Noyes;
chief props, Clarence Ernest and Bert Friend.

Cast: Dolores Del Rio, Reginald Owen, Verce
Teasdale, Osgood Perkins, Helen Lowell, Victor
Jory.

"DAMES." Author and supervisor, Robert
Lord; screenplay, Delmer Daves; directors, Roy
Enright and Busby Berkeley; first cameramen,
George Barnes and Sol Polito; operative camera-
men, Warren Lynch and Al Green; assistants,
Jack Koffman and Louis De Angeles; stills, John
Ellis; recording engineer, Stanley Jones; film
editor, H. McLernor; art director, Bob Haas;
chief electricians, P. Burnett, George Satterfield
and F. Flanagan; chief grips, D. Mashmeyer and
Harold Noyes; chief props, Howard Oggle and
Gene Delaney.

Cast: Dick Powell, Ruby Keeler, Joan Blon-
dell, Guy Kibbee, Hugh Herbert, Virginia Pine,
Ronny Crosby, Zasu Pitts, Bess Flowers, etc.

"BRITISH AGENT." Supervisor, Robert
Presnell; author, H. Bruce Lockhart; director,
Michael Curtiz; first cameraman, Ernest Haller;
operative cameraman, Al Roberts; assistant, Bob
Davis; stills, Homer Van Pelt; recording engi-
neer, Dave Forrest; film editor, Tommy Richards;
assistant, Warren Lowe; art director, Anton Grot;
chief electrician, C. Hutchinson; chief grip, Owen
Crompton; chief prop, Scotty Moore.

Cast: Leslie Howard, Kay Francis, Philip Reed,
John Eldredge, Tenen Holtz.

"HOUSEWIFE." Authors, Robert Lord and
Lillie Hayward; screenplay, Manuel Se and Lillie
Hayward; director, Al. Greffen; first cameraman,
William Reese; operative cameraman, Charles
Seeling; assistant, William Shuck; stills, Mac
Julian; recording engineer, Oliver Garretson; film
editor, Jimmie Gihbons; art director, Bob Haas;
chief electrician, E. Burkholter; chief grip, Charles
Eastman; chief prop, Pat Paterson.

Cast: Bette David, George Brent, Ann Dvorak,
Robert Barrat, John Halliday, Ruth Donnelly,
Hobart Cavanaugh, Ronnie Crosby.

MONOGRAM (General Service Studio)

"THE STAR PACKER." Producer, Paul Mal-
vern; author, screenplay and direction, R. N.
Bradbury; assistant, Glenn Cook; first camera-
man, Archie Stout; assistant, Russell Harland;
stills, Joe Walters; recording engineer, John A.
Stransky, Jr.; film editor, Carl Pierson; art direc-
tor, E. R. Hickson; chief electrician, Edw. L.
Cox; chief grip, Robert Murphy; chief prop, Wil-
liam Stratton.

Cast: John Wayne, Verna Hillie, George Hayes.

DIRT AND SCRATCHES

By BOB TOBEY

FRANK CAPRA is preparing his next produc-
tion, "BROADWAY BILL," and recently spent
a week at Tanforan making race-track backgrounds.
He took with him Joe Walker, Andre Barlatier,
George Kelley and Enzo Martinelli. Andre Bar-
latier, the old background-snatcher, made a trip
to Santa Barbara for a few days, taking Enzo with
him. Andre also made a trip to Columbia's execu-
tive offices, and found they liked his work so well
they had a nice new six-months contract ready for
him to sign and the contract provided for a size-
able increase in salary. Just goes to show, that
murder will out. Marty Crail, Emil Oster's assis-
tant in charge of the Camera Department, has
worked himself up into such a lather over Leica
pictures that he has hault for himself, at no end
of labor, a complete finishing lab so he can fuss

FOX

"GRAND CANARY." Author, A. J. Cronin;
screenplay, Keene Thompson; director, Irving
Cummings; first cameraman, Bert Glennon; opera-
tive cameraman, Don Anderson; assistant, Lew
Kunkle, Roger Sherman; stills, Emmett Schoen-
baum.

Cast: Warner Baxter, Marjorie Rambeau, Zita
Johann, Madge Evans, Barry Norton.

"BABY TAKES A BOW." Director, Harry
Lachman; first cameraman, L. W. O'Connell;
operative cameraman, A. Arling; assistants, E.
Collins and M. Gold; stills, Cliff Maupin.

Cast: James Dunn, Claire Trevor, Shirley
Temple.

"CHARLIE CHAN'S COURAGE." Producer,
John Stone; author, Earl Derr Biggers; screen-
play, Seton I. Miller; director, George Hadden;
assistant, Sid Bowen; first cameraman, Arthur
Miller; operative cameraman, J. La Shelle; assis-
tants, W. Abbott and S. McDonald; stills, Bill
Thomas; film editor, Alex. Troffey; art director,
Duncan Cramer.

Cast: Warner Oland, Drue Leyton, Donald
Wood, Paul Hervey, Murray Kinell, Reginald
Mason, Si Jenks, Virginia Hammond, Harvey
Clark, James Wong, Jerry Jerome, Jack Carter.

"SHE LEARNED ABOUT SAILORS." Pro-
ducer, John Stone. Based on story by Randall
H. Faye; original screenplay, William Conselman
and Henry Johnson; director, George Marshall;
first cameraman, Harry Jackson; operative camera-
man, I. Rosenberg; assistants, H. Dawe and A.
Lebovitz; stills, Gene Kornman; recording engi-
neer, Bernard Fredricks; film editor, Fred Allen;
art director, Duncan Cramer.

Cast: Lew Ayres, Alice Faye, Frank Mitchell,
Jack Durant, Harry Green.

"CARAVAN." (English version.) Producer,
Robert T. Kane; author, Melchoir Lengyel; screen-
play and dialogue, Sampson Raphaelson; director,
Erik Charell; first cameraman, Ernest G. Palmer
and Theodor Sparkuhl; operative cameramen, B.
Anderson and J. Gordon; assistants, W. Cruze and
Robert Mack; stills, Anthony Ugrin; recording
engineer, A. Von Kirschbach; film editor, Bob
Bischoff; art directors, William Darling and Ernest
Stern.

Cast: Charles Boyer, Loretta Young, Jean
Parker, Phillips Holmes, Louise Fazenda, Eugene
Palette, C. Aubrey Smith, Dudley Diggs, Richard
Carle, Charles Grapewin, Bill Bevan, Noah Beery,
Armand Kaliz, Harry Bradley, Lionel Belmore,
Harry Wood, Blanca Vischer.

"SHE WAS A LADY." Producer, Al Rockett;
author, Elisabeth Cobb; screenplay, Gertrude
Bruce; adaptation, Josephine Lovett and Ainsworth
Morgan; director, Hamilton MacFadden; assis-
tant, George Blair; first cameraman, Bert Glen-
non; operative cameraman, J. McDonald; assis-
tants, L. Kunkle and Harry Webb; stills, Em-
mett Schoenbaum; recording engineer, W. Slick;
film editor, Dorothy Spencer; art director, Max
Parker.

Cast: Helen Twelvetrees, Donald Wood, Doris
Lloyd, Ralph Morgan, Monroe Owsley, Paul Har-
vey, Harold Goodwin, Barbara Weeks, Carroll
Kay, Jackie Searles, Ann Howard.

with the little devils. Can make big ones out of
little ones and all that.

There are columns and columns written by us
humans telling what we think about motion pic-
tures, but not often does a dog get a chance to
express his opinion on the subject in a manner
intelligible to us dumb brutes. The following
little tale, folks, goes to show what our lowly four-
footed friend thinks of a movie camera.

I was at Neil Hamilton's home photographing a
swimming party for Screen Snapshots. Esther
Ralston was there (and very cute too) and Alice
White and Tom Keene and a whole batch of others.
I was set up for a long shot of Neil Hamilton's
swimming pool and surrounding grounds, using a
25MM lens without the matte box on the camera.
The pool is flanked by a vast lawn, and bordering
the lawn is a high hedge. George Kelley, assisting
me, set the matte box in a nice safe spot on the
lawn, by the hedge. Just about this time Doug
Montgomery arrived at the party, accompanied by
his mammoth Irish wolfhound. It seems the dog
had been drinking beer. . . . You guessed it, my
people—out of that vast expanse of lawn and hedge,
the dog found the matte-box. For further particu-
lars see George Kelley.



Three tons of silver bullion last less than a week. These bars will soon be dissolved in nitric acid as the first step in converting silver into photo-sensitive materials for motion picture film, Kodak film and Ciné-Kodak film.

(Continued from Page 5)

freshly washed. Purified, dustless air circulates in the room.

Photographic paper has become a semi-finished product in the Kodak Park scheme of things when it emerges from the paper mill, even though it is a fine finished product in terms of paper manufacture for ordinary purposes. Kodak Park's paper must still take the sensitive coating for recording photographs, but, before that is applied an intermediate coating must go on.

To isolate the emulsion from the paper, chemically pure though the paper is, is one function of the baryta coating—one or more applications of barium sulphate—that precedes the sensitive coating. A second function is to control the type of surface required for the photographic paper, of which two hundred and fifty varieties are made at Kodak Park.

In the baryta coating vats, you find coating pigments that are white—not nearly white, or blue-white, or oyster white—but white—a pure, dazzling white that looks white to the eye and that the chemists say is white. When Kodak chemists declare a substance white, you can bet it is white.

Paper plays an important part in Kodak's business quite aside from the actual photographic print material, for the film and the sensitized papers must be carefully packaged to protect them from light. Kodak makes its own packaging papers. Although the problem here is less acute, no less care is exercised in holding the packaging paper up to set standards than in the case of the highly refined photographic printing paper.

Now for a visit to another part of the plant where purity again is the dominating note.

More silver is consumed at Kodak Park than the United States Government is using in minting half dollars, quarters and dimes. Shipments of silver bars arrive daily at Kodak Park, to be kept in a large safe until they are used. Silver is ordinarily quite free from impurities, but Kodak chemists never relax their vigilance. A boring from each bar goes under analysis, for the

slightest quantity of copper or iron must be detected and removed before this silver, transformed into silver nitrate, is ready to go into an emulsion.

Beginning with the solution of silver bars in nitric acid, dusk commences to cover the operations in which silver salts are concerned. Silver nitrate is only slightly sensitive to light, so no greater darkness veils the silver-nitrate operations than shading from the brightness of the sun. But when the silver nitrate goes to the emulsion department, to be combined, with potassium bromide and gelatine and other ingredients, into a diversity of light-sensitive emulsions for a variety of photographic materials, darkness falls, and thereafter all operations—putting the seasoned emulsions on the film (or paper), slitting the film into the proper widths, perforating it for motion picture camera sprockets or spooling it in the proper lengths for amateurs' cameras—go on either in a low-intensity red light or in a green light so dull that only persons accustomed to working in these rooms can see anything.

Scarcely less important than cleanliness is temperature control, for variations in heat would wreak havoc on the manufacture of photographic materials. The House of Kodak, in consequence, operates refrigeration equipment far larger than that of any ice company. Many of these huge machines, each capable of producing cold equivalent to the melting of six hundred daily tons of ice, are in constant operation. Brine, cooled by ammonia, is kept circulating from the refrigeration plants through a piping system that covers many buildings in the Park. In some departments, the thermometer is not permitted to show a variation of more than two degrees all year.

It is an intricate and involved business, that of making photographic materials.

Kodak Park is remarkably concerned with making the present perfect. Another important question, however, is that of making the future fertile. The future, at Kodak Park, is in the hands of the Research Laboratories, with their staff of two hundred or so. From these laboratories have come marvels of photographic progress—home movies, home movies in natural color, photographic emulsions that can take pictures from hundreds of miles away, other emulsions that can take pictures in darkness, other emulsions that have greatly "speeded up" photography by artificial light and numerous refinements that have contributed to the broadening field of picture making. The Kodak Research Laboratories are a veritable research university in the field of photography.

Conjure up the photographer of a little more than fifty years ago. His camera was a large, clumsy instrument. He carried with him a portable darkroom in which he had to sensitize his own plates before taking his picture. He worked under difficulties that seriously confined public interest in photography. He knew nothing of the harmful results of foreign elements in plates and paper (there was no film fifty years ago)—foreign elements that tended to spoil his materials. He knew nothing of these things except that his materials were often spoiled. The wonderful thing about him is that he didn't give up photography as a bad job.

Perhaps the reason he didn't is that along came Eastman, with ideas of simplification and standardization. Eastman visualized, and established, a system of film photography that turned a difficult vocation into a simple pastime and a versatile tool.

Early in his experience, George Eastman discovered through adversity, the need of pure raw materials and proper methods of manufacturing control. For fifty years the organization he founded has been working on that knowledge and refining it. For three generations, the progress has been steady toward that important goal—absolute purity of materials.

DANTE'S INFERNO HAD NOTHING ON THIS

(Continued from Page 12)

longer navigable. Enormous masses of pumice floated on the sea and stopped navigation.

Where the Island of Krakatoa had stood there was now sea 600 to 1,000 feet deep. The shaded area on the accompanying map illustrates where the tidal wave drowned more than 70,000 people. Two hundred and ninety-five villages were inundated and the waves were of such force as to reach and be observed at Cape Horn, 7818 geographical miles away. Such was the energy initiated by the eruption of Krakatoa.

After this outburst Krakatoa seemed to settle down peacefully, until the summer of 1931, when it again began to erupt.

Mr. Joe Rock was in the Orient at that time. Hastily he left for Batavia, for the purpose of organizing a crew to photograph the spectacle. Upon his arrival there he found that J. H. Bekker, an independent cameraman, had some friends who had furnished him with enough funds to hire two sea planes and a boat. In these planes Mr. Bekker and his party flew all around the volcano which was hurling dust and rocks four miles into the air. They were so close sometimes that hot lava fell on the wings of the plane, in one instance causing one of the wings to catch fire. At the risk of his life, one of the men crawled out to extinguish the fire. However, this necessitated landing immediately and fortunately the boat was handy to pick them up. The party remained on the scene three days and three nights, not knowing when their work would suddenly end in catastrophe.

Many shots were taken from the boat, which went as near the volcano as 300 feet. By examining the film, cameramen and lens experts agree that these close shots were not taken with a telephoto lens, but with a two or three inch lens. Part of the boat is in some of the shots, which further proves that the foregoing statement is true.

There must have been a large steamer passing over the volcano when the last eruption occurred. Wreckage of a ship was found close by and a boiler was found several miles away.

Mr. Bekker came back to Batavia with his film at about the same time as Mr. Rock arrived. Immediately Mr. Rock contacted him and saw the film run on the screen. He was satisfied with the results and made a deal with Mr. Bekker.

Upon arrival here in Hollywood, Mr. Rock took the film to all the major studios for a showing. Strange to say, they all turned it down, with one exception. Mr. Cummings at MGM wanted to buy it outright, but Mr. Rock wished to make a deal for distribution and couldn't let it go otherwise.

Imagine a great picture like this being turned down by major studios.

When Mr. Joe Brandt bought into Educational, he asked to see the film. As soon as the picture had been run he made the deal.

The results speak for themselves. The picture is a real sensation!

In closing the writer wishes to extend grateful acknowledgment to Messrs. Scott, Judd, Ball and the Royal Society of Geologists.

DEBRIE EXPANDS

Mr. George Noffka, general manager of Andre Debie, Inc., is now at the Hotel Roosevelt, Hollywood, displaying the new model Debie Super Parvo 35mm Camera. While in Hollywood, it is Mr. Noffka's intention to appoint a Western representative for the Debie line of cinematographic equipment. Eastern sales are under the direction of Mr. H. R. Kossman, whose offices are located at 115 West 45th Street, New York City.

CINE-KODAK UNIVERSAL FILTER HOLDER

A device that permits a single filter to fit a variety of lenses has been put on the market by the Eastman Kodak Company, designated as the "Ciné-Kodak Universal Filter Holder." A metal collar, equipped with rubber-covered coil springs arranged in such a way as to clamp on lenses differing in size, the device provides an unchanging circumference to which the filter may be affixed, thus eliminating the need to buy different filters for different lenses.

The Ciné-Kodak Universal Filter Holder's usefulness will be, of course, for persons with interchangeable-lens cameras. The Ciné-Kodak lenses it is designed to fit are the following ones: f. 2.7, 15-mm.; f. 3.5, 20-mm. (interchangeable style only); f. 1.9, 1-inch; f. 3.5, 2-inch; f. 4.5, 78-mm.; f. 4.5, 3-inch; f. 4.5, 4½-inch. In addition, it will fit many lenses of other makes.

The U7 Ciné-Kodak Color Filter is of the correct size to slip over the filter holder and thus becomes standard when the holder is used.

TRAILEREEL

TRAILEREEL—a sample of which has just been received, is a convenient device in the projection room for winding trailers, etc. It is made of well finished aluminum, with a hub one inch in diameter. It has the usual opening and keyway for the rewinder, one side being a solid disc one-eighth of an inch thick and 5½ inches in diameter. It is cast in one piece and fully guaranteed. TRAILEREEL has been rigidly tested by projection supervisors, who have praised it highly. It may be purchased for the surprisingly low price of \$1.00 from the Trailereel Mfg. Co., East Hartford, Conn.

16mm. COLORED SOUND MOVIES FEASIBLE EXPERIMENTS SHOW

Laboratory experiments which for the first time demonstrate the practicability of making and printing 16 mm. sound-on-film motion pictures in natural colors, were described recently before the Society of Motion Picture Engineers convening here, by research engineers of the RCA Victor Company of Camden.

It is believed that these experiments will open up a new and potentially broader field of usefulness for the convenient 16 mm. size sound-on-film industrial and educational motion pictures which have hitherto been restricted to black and white sound photography. With the new color methods, products which depend on rich coloring and design for their principal sales appeal will have new avenues of merchandising and selling opened up for them. Color photography added to sound should also prove valuable in enhancing the "eye value" of other types of products and services. Its application to visual education will mark an important step forward in that field.

The sound recording experiments with color photography were conducted by the RCA Victor Company engineers with the Kodacolor film and color filter process. Actual recording tests showed that no distortion of a serious nature resulted from the peculiar base of the film which is specially embossed (longitudinally lenticulated) for color sensitivity. Further experiments by the Camden engineers established that color subjects made by the subtractive color process on standard 35 mm. film could be optically reduced to 16 mm. size and successfully printed on Kodacolor film stock.

AMATEUR TALKIES CAMERA SOON HERE SAY ENGINEERS

The development of simplified apparatus which promises to make it possible for anyone to make personal sound motion pictures in the near future was described recently in a joint paper delivered before the Society of Motion Picture Engineers, by research engineers of the RCA Victor Company of Camden.

It was disclosed that since the advent of sound revolutionized the motion picture art, the Camden engineers have been working on the problem of developing a practicable amateur sound camera, which would be compact in size, and simple and economical to operate. According to the paper presented, these efforts are expected to bear practicable fruit in the near future.

The sound camera apparatus discussed utilizes 16 millimeter film with a narrow track on one side for recording sound. It was described as a "newsreel" type, incorporating the sound recording system in the single light-weight camera case. As the subject is photographed, the operator talks into a mouthpiece leading to a vibrating metal diaphragm. This diaphragm, which is set in motion by the speaking voice, is coupled mechanically to a tiny mirror which vibrates in unison with it. A light beam directed on the mirror is reflected with its fluctuations on the sensitized edge of the film as it passes through the camera. For recording the voice of the person or group being photographed, as well as for atmospherical sound effects, a separate microphone attachment together with electrical amplifying and recording equipment are provided for convenient mounting on a specially designed "unimount" tripod upon which the sound camera itself may also be set.

The paper emphasized that while experimental models of amateur sound cameras have been brought to an advanced stage of development in the laboratory, the final models would not be ready for public use for several months yet.

AROUND THE WORLD ON LOCATION

(Continued from Page 14)

Later on we were entertained by the King's private dancers and a parade of his sacred elephants. Taken all in all, it was a great birthday party, with the King having as much fun as anybody and snapping pictures right and left with his small camera, prints of which he proudly showed us the next morning. If a colorful background and interesting, happy people, connected with a unique story, have anything to do with it, we should have a very interesting short subject of Cambodia.

Leaving Phnom Penh we drove farther into the interior of Indo China, eventually arriving at the world-famous ruins, Angkor Wat. Here again we met our old friends, the Bonzas, and with their help, wove a story around the deserted ruins of what had once been one of the world's most beautiful cities. Angkor covers approximately twenty-five square miles. There are some twenty or more large temples and palaces and many smaller ones that have been won from the dense jungle by the extensive exploration of the French Government. It was our pleasure to meet Mons. Marshall, who has spent the greater part of his life obtaining historical data and rebuilding these marvelous old ruins. It is impossible to describe their magnificence and one must see them and spend many hours climbing up huge steps, through long, dark corridors and feeling the silence that seems to surround them, to appreciate them, even in part.

One amusing incident stands out from all the others. In the very top of the largest building of Angkor is a small alcove that seems to be the storehouse of all the stone, bronze and wooden idols of Buddha, reclaimed from the ruins. To this place we brought fifty yellow-robed Bonzas, as we wanted a scene of these monks paying homage to the Buddha. The camera was set up on the rock floor while Paul Perry and the rest of our party were outside the temple working on our generator. I

was staying close to the camera, as a slight bump on that rock floor would cause it to slide.

The Bonzas were friendly, but as inquisitive as ever. They had mooched all of my cigarettes, a package of gum and a box of raisins that I had and I was casting around for some way to entertain them and keep them happy, anything, in fact, to steer them away from the camera. It was beginning to look like a hopeless task when I remembered that there was a small German music box in my camera case.

Some years ago I had been given a wine jug (without the wine) as a Christmas gift, and in the bottom of this jug was a music box. The jug had long since been broken, but the music box remained as a necessary part of my equipment. Winding it up, I set it in the hand of a large, bronze image. The melody of "How Dry I Am" filled the temple. The priests sat around very quietly, as it was some new miracle to them, and they were quite happy and forgot all about the camera; so, for the next three-quarters of an hour, I played "How Dry I Am," for what seemed like a hundred times, and on any future trips I shall never be without something to keep the natives happy.

Our work finished at Angkor, we returned to Saigon, and there took a small China coaster, the Sun Sche, back to Hong Kong, where Paul and I made new contacts and obtained much information regarding our Chinese pirates' story, which we hope to make in the near future. And right here I want to say that I have never worked with a finer fellow than Paul Perry, and I am looking forward to the time when we can be together again. There is an old saying about one going to the Orient—if you go there once, you will spend seven years before you shake the dust of the Orient from your feet for good. After fourteen trips to the Orient I have learned that there is no place so wonderful as California, but I also know that I shall go back to the Far East again, maybe for—JUST ANOTHER LOCATION.

EARL THEISEN'S HOLLYWOOD NOTEBOOK



BEFORE an infant can appear before the camera there are miles of red tape to be unwound. The State of California has done everything possible to protect the youngsters in the movies. For instance, little Katherine Snelling, at Universal Studio, could not be in films without the consent of both parents; a welfare worker as well as a trained nurse had to accompany her to the studio.

The baby could remain at the studio for only two hours and is permitted to "act" only twenty minutes. No smoking is allowed on the set while she is working. Also a properly heated nursery and a thoroughly disinfected auto must be provided. The salary paid the infant's parents is fixed by California State Law and is at the rate of three hundred dollars a day.

While on the subject of babies mention should be made of Pete Smith's short subject on baby raising, which is to be released by Metro-Goldwyn-Mayer. The picture will illustrate the right and wrong methods of doing things for the infants. The picture should include directions of what can be done with the child while the parents go to the movies.

Another short that would prove popular could be on the care of the older babies; when to buy them diamonds, when to feed them and in what quantities, what to do with them on club nights, and many other practical phases of the subject could be covered. Of course such a subject would have little value in Hollywood, since here the babies are busy in the movies.

"The Butcher who sells you a ham, doesn't worry about its fate. You can boil it or fry it or drop it in the well; it's all the same to him after he gets his money." That is the attitude of Irvin S. Cobb, who has sold a number of his Judge Priest stories to Fox Film. Cobb should be appointed a missionary of one to convert other equally famous writers to a faith in the picture makers who are in the business of making pictures. Until now most famous writers were egotists enough to feel that they knew the picture medium. A few story conferences in the studios showed them there was as much difference in the screen story as there is difference in prose and poetry.

William Darling, Fox Film art director, is faced with the task of reproducing an entire Hungarian village to be used in "Caravan." The "Chateau Tokay," an immense structure nearly two hundred feet long and more than sixty feet high, with its moat, drawbridge, and portcullis, is nearing completion on the crest of a hill at Fox Movietone City.

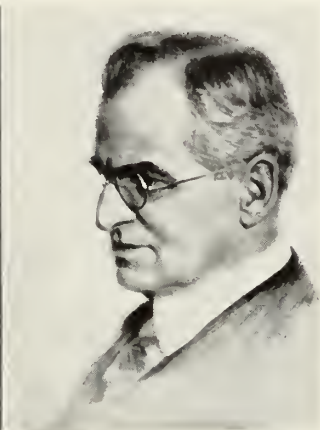
Did you know that much of the material that goes into make-up is ground as fine as the pigment in ink? In fact the same type of machine is used in both factories. Max Firestein, of Max Factors, took me through the Max Factor Make-up Factory. He showed me vacuum machines for cleaning the boxes from the factory before make-up materials are put into them, machines for pasting a label on any shape bottle (in fact, the same machine will put a number of labels on the same bottle), machines for screwing caps on bottles, and so on endlessly.

KODAK HONORS BUILDERS

Eastman Company Elects President Stuber Chairman and
Sends F. W. Lovejoy To Presidency



F. W. Lovejoy



William G. Stuber

The Eastman Kodak Company has a new president, Frank W. Lovejoy, who recently succeeded William G. Stuber when Mr. Stuber was elected chairman of the board of directors to fill the vacancy existing since George Eastman's death.

Mr. Lovejoy has been associated with Kodak for 37 years. Three years after his graduation in chemical engineering from the Massachusetts Institute of Technology he came to Kodak Park as superintendent of the film department. In 1900 he became manager of the Kodak Park Works, in 1906 general manager of manufacturing departments, in 1919 vice-president, and in 1925, when Mr. Eastman relinquished active management of the Kodak Company, general manager.

As president, Mr. Lovejoy retains the duties of general manager.

Mr. Stuber resigned the presidency, with its more active administrative duties, two days after his seventieth birthday. Along with his functioning as chairman, he will continue to watch the quality of the company's photo-sensitive products, his specialty since he joined the Eastman organization in 1894.

Mr. Stuber came to Rochester from Louisville, Kentucky, where he was a successful professional photographer. His original charge with Kodak was dry-plate manufacture. Shortly after he had assumed that work, he took charge of making the sensitive emulsion for films,

NEW BOOK FOR THE CINEMATOPHOTOGRAPHER

MOVIE MAKING MADE EASY

By WILLIAM J. SHANNON

219 Pages—36 Illustrations

Moorfield & Shannon, Nutley, New Jersey

The title of this book is well chosen, because the author has approached the question of movie making in a simple and practical manner. One gets the feeling of wanting to get to work without delay for like the books of Dan Beard that told how to make tree houses, caves and all manner of boyhood contraptions, this book tells how to build many fascinating things that have to do with movie making.

The glamor is all there. For instance, mention is made of one enterprising enthusiast who built a "theatre" in the cellar, boasting such refinements as a "proscenium arch resplendent in mottled gold" and "glimmering drapes of soft rayon." The latter served a double purpose, acting also as a screen to hide the heater and the wash tubs.

In fact, the whole book deals largely with the practical question of *what to do* from the time the camera is selected until the finished picture is shown on the screen and for this reason it is bound to make a hit with boys young and old who, like Tom Sawyer, are showmen at heart.

on the quality of which depended the prosperity of the company.

Mr. Stuber was above all an expert in photographic quality, and his skill in that field supplemented Mr. Eastman's ability as an organizer and an executive. The rapid growth of the company was a result of that association, depending as it did on the continuous improvement in the quality of the Kodak products and on the developments necessary to adapt those products to the great variety of uses to which they are now put.

In 1918 Mr. Stuber assumed charge of all the sensitive materials made by the company, adding the production of photographic papers to that of films and plates. In 1919 he became vice-president in charge of photographic quality.

Upon the retirement of Mr. Eastman from the presidency, in 1925, Mr. Stuber was elected to succeed the founder as president. In that position he has led the company through the difficult problems that have confronted it, both in its domestic trade and in its international trade; but at the same time he has continued to take a special interest in the quality of the sensitive materials.



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CONTINUITY OF AMATEUR PICTURES

By WALTER BLUEMEL

(Chief of Workshop, Department of Cinematography, University of Southern California)



ALTHOUGH this magazine may appear as intended chiefly for technicians, especially cameramen, an article on story and continuity may seem somewhat out of place here until one realizes the importance of a close association between writer, director and cameraman. It is only by full co-operation between these departments that the best results are obtainable, the ideal being reached when they are one, at least in effect. Only then can perfect unity, which is so necessary for good pictures, be achieved. This condition is, unfortunately, not usually possible in professional productions, but, with exceptions, is readily possible in amateur production.

In order that a picture may be interesting it must have some form of continuity—a linking together of the separate scenes, which alone have little value, into a congruent whole, the combined effect of which is to tell an interesting story which produces an emotion or series of emotions as desired by the writer and director. Without the co-operation of the cameraman, and his understanding of what mood, emotional, or pictorial effect is desired, the separate scenes will not fuse into a congruent picture, and the effect desired by the writer and director will be lost. Hence the importance of close co-operation and the necessity for the cameraman to understand story and continuity construction.

I do not believe that the amateur should be taught a lot of theory, for there is no substitute for learning by experience, and too much theory can only be confusing. He will, also, get more enjoyment out of his pictures if they are the result of his own efforts than if he follows closely someone else's suggestions. Enjoyment, after all, is his chief, and sometimes only, desire in making pictures. My object in presenting suggestions is only to whet up the amateur's interest and ambition to make better films, and to help him find new methods of approach. The space here is too limited to go into any amount of detail on the matter of story and continuity construction (for which purpose I again refer to the books I mentioned last month, as well as others on story writing), but a few suggestions at random will not be out of place.

The question the beginning amateur who has just received a movie camera will ask is: "What shall I photograph?" Realizing that he is dealing with a pictorial medium, and especially one that moves, his first impulse will be to photograph anything that moves. His pictures are merely a group of unrelated scenes, each of which has movement of its own, but does not contribute to the whole effect of the film. It is equivalent to a lot of moving snapshots, and produces no more effect on an audience than a group of ordinary snapshots would do. Like snapshots, these scenes may at first be of interest to the person who took them, or the people who appear in them, and their friends and relatives, but, like the novelty of motion, the novelty of seeing friends, relatives, the baby, or, perhaps, some vacation scenes, soon wears off. If the money spent on movie equipment is not to be wasted, it is time then to consider improving the future films by using good continuity, effective direction and photography, and constructive editing. This only can give lasting appeal.

Every amateur is surrounded with things that have

story possibilities. He should train himself to appreciate these possibilities and make the most of them. Instead of just taking pictures of the baby or the vacation trip without any thought for continuity, why not make them doubly interesting by building up a continuity around them? Innumerable incidents come up continually in the average person's life which suggest a story for pictures. Some of the most common emotions and experiences often suggest the best story material. In this connection Rudolf Arnheim, in his book "FILM", says: "It is of the greatest works of art that it can most truly be said that they are concerned with emotions everyone knows and experiences—jealousy, filial love, revenge, loyalty, treachery." To make interesting, or even artistic pictures, it is, therefore, by no means necessary to go to out of the way places for out of the way subjects, nor is it necessary to have elaborate equipment. By good continuity, or treatment, most commonplace subjects can be made good picture material. The possibilities are unlimited.

Among professional scenario writers, the rule generally is to first choose the character or characters, and then write the plot around them. A plot without characters is naturally impossible. Once, however, we have a specific character, or group of characters, whether real or fictitious, a story can readily be woven around them. The character himself, by his appearance or mannerisms, will often suggest a story to the writer. As with the professional writer, who must usually write for some particular star, the amateur must write stories which fit characters at his disposal. He must, therefore, choose the characters first and write the story around them. The baby, to use a common example (so many amateurs seem to have babies to take pictures of), has excellent story possibilities to the imaginative picture maker, and a picture-story of the baby serves the double purpose of being a photo-record and of being interesting to those who have no particular interest in the baby itself. The same applies to pictures of friends and relatives.

The principal character need not always be human. The family pets often offer good story material. Even inanimate objects can sometimes be characters, as, for instance, the family car in a vacation picture. Not long ago I wrote a little scenario in which a dam was the principal character, being the villain. Thus there are so many story possibilities all around that I hardly need mention them to the imaginative amateur.

Travel pictures may at first seem devoid of any continuity, but it is very rarely that they are. When there are several people in the part they can readily be made to link the scenes by building a little scenario around them and their travels. The incidents will usually suggest themselves, and in this case the story must be built up as you go along, as was frequently done in very early motion pictures. The country traveled over should suggest story material, as will the characters themselves by their actions and appearance.

Repetition in the form of running gags may be used effectively to create comic relief in an otherwise unexciting travel film. A repetition of the same scene throughout the picture is sometimes very comical. This method is used in the J. P. Medbury and Pete Smith travelogues. I remem-

ber one of J. P. Medbury's in which a native was shown trying to light a fire by friction. This scene was inserted several times throughout the picture, but still no fire, until near the end a big brush fire was shown, to which Mr. Medbury announced that the native had finally started his fire. In another travel short on Holland, a native was shown bailing out his boat throughout the picture, while in a Pete Smith short on bicycles from old times to the present one of the old-timers ran into a lake, and spent the rest of the picture struggling to get out. The same scene, was, of course, used each time. The amateur who plans to travel would be wise to study professional travel films for tricks of continuity. Clever titles will help much, and will to some extent supplant the explanatory dialogue of the professional pictures.

My advice to the beginning amateur who wishes to make a picture with continuity is to first take into consideration his resources. He should consider what characters are available and what are their dramatic abilities. Then the locations must be considered, for they can naturally not be made to order as in a Hollywood studio. An amateur living in the Middle West cannot expect to make a South Sea Island picture, or a Foreign Legion picture, but must confine his picture subjects to life in the cities and countrysides of that section of the country. Then, too, the amateur must choose stories which his equipment will allow him to film. For example, if he does not have adequate lighting equipment, an abundance of interiors is naturally out of the question, or if his camera does not have a critical focusing device it would hardly be wise to make a picture entirely in close-ups. Technical problems, however, should be the least worry to the amateur who has any ingenuity and inventive ability. In planning to make a picture he should first consider what he has to work with, and build his story and continuity accordingly. His characters, his locations, and his equipment will suggest the story, the continuity, and the technical treatment

he can give it. No amateur, I am sure, is so unimaginative or has so few resources that something will not suggest itself to him.

Once the story has been chosen, the next stage is to put it into detailed scenario, or continuity, form. This is also called the treatment. Assuming that the subject matter, or story, is the same, the treatment is the deciding factor in the quality of the film. It can make a story into a good picture or a bad one, an artistic picture or an uninspiring one. Two current pictures, "Catherine the Great" and "The Scarlet Empress" have almost identical stories, yet their treatments make them as different as any two pictures could be. "The Scarlet Empress" is an excellent (though, perhaps, somewhat overdone) example of purely cinematic treatment, and of the tremendous possibilities of the motion picture as an art medium, while the English picture is, by comparison, just another picture, leaning, because of the large amount of dialogue, too much toward stage technique, and above the average only because of subject-matter.

When writing the continuity, always think in terms of pictures, not in words or thoughts which cannot be shown on the screen. The camera can record only concrete physical events, not the abstract, like thoughts or emotions which have no visible manifestation and cannot be translated into visible terms. There can be no abstract explanations except in dialogue or titles. In the scenario words should serve only the purpose of explaining how a visible subject is to be photographed—they must not express something that is purely literary and cannot readily be transformed into the pictorial. The pictorial is always more vivid than the spoken or written word, and the motion picture is essentially a pictorial art.

If a person in your picture is to be characterized, don't use a title for this purpose, but express it through his actions and appearance. His thoughts and emotions can

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MOTION PICTURE SOUND RECORDING

CHAPTER IX



THIS chapter introduces the discussion of audio-frequency amplification, particularly as it is employed in motion picture sound recording to increase the weak speech current to a value great enough to operate a recording device. Many of the modern miracles of science owe their existence to the vacuum tube and its application as either rectifier, oscillator, detector, or amplifier. Sound motion pictures, long-distance telephony, radio broadcasting, television, and a host of other twentieth-century marvels are outgrowths of the application of the vacuum tube in one or more of its various capacities.

The Transmission Line

When the monitored speech current leaves the main volume control in the monitor room it is carried by a transmission line to the amplifier room, which in permanent installations is usually located fifty or more feet from the monitor room. Like all the transmission lines in the sound recording studio, this line is formed of two rubber-

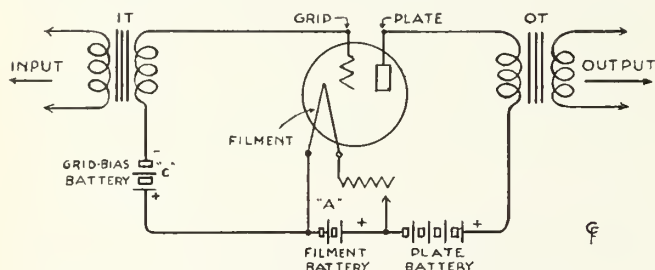


FIGURE 1. ONE STAGE TRANSFORMER-COUPLED AMPLIFIER

covered wires encased in a lead shield. In the older type of transmission line the two wires were run parallel within the shielding; but in the newer type of line the wires are twisted about each other inside the shield. This may seem like a trifling detail, but that is not the case.

The lead covering over the wires serves as an electrostatic shield, preventing stray electrostatic currents being induced in the wires, but it does not serve so effectually to block the influence of any electromagnetic fields to which the transmission line may be exposed. The result was that when a number of these shielded transmission lines of the older type were bound together in a cable, the electromagnetic fields about each pair of wires had an effect on the adjacent lines. Twisting the wires about each other inside the lead shielding, as is now done, causes the electromagnetic fields about the two wires to cancel each other out, resulting in the almost total elimination of any external electromagnetic field about the transmission line.

The Vacuum Tube

The type of vacuum tube used in sound recording has three elements: a filament, a grid, and a plate. The filament is a hairpin of wire, usually formed of a platinum-nickel alloy coated with a mixture of certain oxides that give out electrons freely when heated. The grid is a spiral of fine wire around the filament; and the solid metal plate is supported outside of and surrounding the grid. These three elements are enclosed in an evacuated glass bulb. The two ends of the filament, the grid and the plate leads are connected to the four prong terminals on the base.

By CHARLES FELSTEAD
Associate Editor



An electric current from the filament battery (the *A* battery) flowing through the metal of the filament heats the oxide coating and causes it to emit electrons. The plate is maintained positive and at a much higher potential (voltage) than the filament by means of a plate, or *B*, battery. Operating on the electrical principle that like charges repel and unlike charges attract, the positively-charged plate attracts the electrons (which are negative charges of electricity) released by the filament and draws them through the grid mesh. This flow of electrons from the filament to the plate sets up a plate current that is steady in value as long as the plate voltage and filament temperature are not changed and there is no potential applied to the grid of the tube.

Functioning of the Grid

When a vacuum tube is used as an amplifier, the grid is kept at small negative potential with respect to the filament by means of a grid-bias (*C*) battery, or by means of a voltage obtained from the filament or plate battery. This negative charge on the grid tends to repel many of the electrons emitted by the heated filament and prevent their passage to the plate, in that way limiting the plate current flow to a value that is determined by the amount of the negative charge on the grid. The higher the negative grid potential the lower the value of the plate current, filament temperature and plate voltage remaining the same.

The alternating voltage that is to be amplified (the speech voltage, or speech current, in sound recording) is applied to the grid circuit of the tube in series with the grid-bias battery, as shown in Figure 1, the amplified diagram of a one-stage transformer-coupled amplifier. The variation in the speech voltage causes the potential of the grid to vary proportionately. When the speech voltage is on the negative half of its cycle it increases the value of the negative potential on the grid, and when it is on the positive half of its cycle it decreases the negative grid bias potential. The fixed grid bias voltage is chosen so that at no time will the grid be permitted to attain a positive value, because that would cause electrons to be drawn to the grid, creating an appreciable grid current flow and resulting in distortion of the amplified speech current.

The variation in grid potential under influence of the applied speech voltage produces a corresponding but much greater variation in the number of electrons that are permitted to pass through the grid mesh and reach the plate. This results in a variation of plate current which, after it is fed through the output transformer *OT* to the next tube in the amplifier or to a transmission line, becomes a variation in speech voltage. This output speech voltage is—in a correctly designed amplifier circuit—an exact but considerably amplified copy of the speech voltage supplied to the input transformer *IT*.

Tubes Used In Sound Recording

The audio amplifiers used for sound recording have from one to four stages of amplification—that is, one to four tubes—each stage serving to raise the level of the

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CONTINUITY IN AMATEUR PICTURES

(Continued from Page 23)

usually be shown cinematically. The Russians and Germans are especially adept in showing thoughts and emotions in terms of pictures, sometimes symbolically or by indirect suggestion, and sometimes by close-ups of the actor's features, hands, etc. That this does not necessarily require difficult action is borne out by the fact that the Russians (whose pictures, though not entirely according to our tastes, are dramatically powerful and vivid) use mostly natural types, that is, characters taken from the walks of life they depict in the picture, and who have had no previous motion picture experience. An actor need not go into hysterics to show that he is angry: a close-up of his clenched fist will put the idea across much more effectively. Overacting to express an emotion is inexcusable, for there are many more subtle ways in which it can be shown.

Restraint is often more powerful than a violent exhibition of emotion, as is evidenced in the pictures of Greta Garbo, Marlene Dietrich, Norma Shearer, Helen Hayes, and other outstanding actresses. For the amateur it is especially well to practice restraint, for there is always a tendency to overact. Observation of the people around him will teach him better than anything else how people act, and suggest little characteristics and mannerisms which he can use very effectively in his pictures. Keen observation is indeed a valuable help in writing and directing a picture.

Little details of action and properties can often be used much more effectively than the whole. Details, if used properly, give emphasis. The detail becomes the symbol for the whole, and, because it concentrates the attention, has more dramatic significance than the whole. The close-up is a very valuable property of the motion picture, and if used judiciously there is little danger that it will be over-done. The amateur, especially, will find it useful in showing scenes which, because of limited sets and equipment, could not be shown in full shot.

Symbolism and indirect suggestion, which frequently go hand in hand, may also be used to express incidents which are prohibitive to the amateur. The symbol, whose meaning must, of course, be generally understood, can be a representation of the object, the event, or even an abstract subject, which cannot be, or is not desired to be, shown actually. A flag, for instance, is a symbol of the country to which it belongs, and if it be desired to show the defeat of that country in war, which, of course, the amateur could never do, it is a simple matter to show the flag being taken down from its staff and the flag of the victorious country being raised in its place. The Russian Eagle is a symbol of Imperial Russia, and I remember one picture in which the Russian revolution was symbolized by mud being thrown on the coat-of-arms. In "Scarlet Empress" gargoyles were used continuously to symbolize the grotesqueness of that period. In "Dr. Jekyll and Mr. Hyde", instead of showing a passionate love scene the camera panned to a statue of cupid. Innumerable examples of symbolism and indirect suggestion could be given, especially from the pictures of Ernst Lubitsch, Rouben Mamoulian, and Josef von Sternberg, as well as those of outstanding European directors. A word of warning in their use should be given, however. They must not be trite, or their effectiveness will be lost, yet they must be such that their significance is clearly understood. Subtleness in pictures is desired only to the extent where its meaning is still evident.

The amateur continuity writer should, by all means, have a knowledge of the principles of montage, which are outlined in detail in Rudolf Arnheim's book, and by Podovkin in "Film Technique." It is essentially a process of constructive editing—of assembling the separate strips of film, unrelated by time and space, or even subject,

into a complete, unified pictures—and involves the utilization of many cinematic devices, such as similarity and contrast, parallel action, repetition, flash-backs, association, camera position and angle, details, symbolism and indirect suggestion, transitions, intercutting, superimposition, tempo and rhythm, and others, with which most amateurs are, no doubt, already partly familiar.

With all these possibilities at the disposal of the continuity writer it is just as important that he know what effect not to use as to what to use, for, as Arnheim puts it, "It is the fundamental condition of a work of art that it should contain everything essential and nothing superfluous." An unusual camera angle used just for an unusual

(Turn to Page 28)

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MOTION PICTURE SOUND RECORDING

(Continued from Page 24)

speech current by an amount determined by the type of tube used, the voltages applied to the tube, and the coupling devices in its input and output circuits. There are several different types of tubes used in sound recording; but they are all operated from batteries to avoid any possibility of an alternating-current hum being introduced in the sound record, as might well be the case if rectified a-c. supplies were used. In radio receivers the amount of audio amplification is so very much less than in a recording channel that any a-c. hum present in the power supply is not amplified to an extent great enough to be troublesome.

The tubes used in the condenser microphone amplifiers and in certain types of pre-amplifiers are of the small "peanut" type that operate on low filament and plate voltages. These tubes are not required to handle a large amount of audio power because the speech energy in this portion of the circuit is at an extremely low electrical level. The other tubes in the recording system are of standard size; although there is a considerable difference in the electrical characteristics of the different types.

The tube used in the low level portion of the main amplifier circuit—the input from the monitor room transmission line—is of the voltage amplified type. This tube provides a large step-up of speech voltage, but is capable of handling very little audio power in its plate circuit. The shape and construction of the elements, their spacing, and the voltages applied to a tube determine its type. The tubes used in the final amplifiers, the ones that supply energy to the recording devices, are of the power amplifier type. They provide very little voltage gain but are constructed to control the flow of a relatively large amount of electrical power in their output circuits. The intermediate tubes are a compromise between these two types.

The purpose of voltage amplification is to build up the voltage of the speech energy to the highest possible value without regard to the actual electrical power involved; and the purpose of power amplification is not so much high amplification of the speech current as it is to increase the energy of the speech current so that it will have sufficient power to do work.

Amplifier Circuits

The apparatus used in coupling the tubes in an audio amplifier to each other or to other equipment—the coupling device—is an important element in determining the amount of amplification provided by the amplifier. There are three main types of coupling devices and several modifications of these three types. They are: resistance coupling, impedance coupling, and transformer coupling. There is not the space to discuss these circuits exhaustively, so only brief comparisons between them will be made.

Resistance coupling employs a resistance in the plate to *B* battery circuit of one tube, and another resistance (grid leak) in the grid to filament circuit of the following tube, and two circuits being coupled together by a coupling condenser that connects from the plate of the one tube to the grid of the following tube. This is known as a 1-to-1 coupling device because it provides no step-up of speech voltage. This coupling arrangement is not economical of plate voltage because of the large voltage drop through the plate resistor; but on the other hand it does not distort the quality of the speech voltage passing through it, providing when correctly designed absolute fidelity of amplification.

Impedance coupling is like resistance coupling with the single variation that an impedance (a choke coil) is substituted for the resistance in the plate circuit of the first tube. This likewise is a 1-to-1 coupling device; but it does not require such a high plate battery voltage to supply the same tube plate voltage, because the direct-current

voltage drop through the impedance is a great deal less than the voltage drop through the plate resistance. Although the direct-current resistance of the impedance is low, its impedance (resistance) to the alternating speech voltage is as high for most frequencies as that of the plate resistance. The fidelity of amplification of impedance coupling is not as good as that provided by resistance coupling, but it still is excellent.

Transformer coupling employs an audio transformer having two windings of wire—a primary and a secondary—on an iron core. The primary winding is connected in the plate circuit of the first tube in place of the plate resistance, and the secondary winding is substituted for the grid leak in the grid circuit of the following tube. No coupling condenser is employed between the tubes, the coupling being furnished by the mutual impedance of the two windings.

This form of tube coupling provides a decided voltage step-up between the tubes, the exact amount depending on the ratio of the turns in the two windings. Less stages of amplification are required if transformer coupling is substituted for resistance or impedance coupling; but the output of a transformer-coupled amplifier is a much less faithful copy of the input speech voltage than would be provided by an amplifier employing either of the other types of couplings. In other words, more uniform amplification over the audio frequency range is provided by resistance or impedance coupling.

The Recording Channel

A sound recording channel is formed of the microphones, the monitoring apparatus, the amplifiers, the recording machines, the motor control system, and the batteries necessary to comprise a complete recording system. A semi-portable (mounted in a motor truck) or portable (trunk-type) recording unit is a single recording channel; but the permanent installations in studios comprise two or more complete channels.

The several recording channels in a studio are separate and independent, with the exception of a common battery room, motor control room, and main amplifier room. The channels each have their own monitor and recording rooms and their own sound stage. Individual intercommunicating telephone systems and signal light systems are provided for each channel.

Main Distributing Frame

In the permanent sound installation, the amplifier room is located as nearly as possible in the center of the recording studio. In this large room all the wiring for the several channels is brought to a common point, a bulky metal framework supporting dozens of terminal blocks and known as a main distributing frame, or MDF. Every terminal block is equipped with some twenty terminals, each terminal numbered and listed in a catalog. The input and output circuits of practically every piece of speech equipment in the sound recording installation, whether located in the amplifier room or not, are brought to the terminals on these connection blocks.

Large panels made up of rows of double jacks are mounted in the main amplifier bays. The terminals of each of these double jacks connect to terminals on the connection blocks. Wire straps link the proper terminals on the connection blocks together, thus placing these double jacks in the input and output circuits of each piece of speech equipment terminating on the connection blocks. By means of special plugs that fit the jacks, connection may be quickly and easily made to the input or output of any piece of speech equipment. Permanent alterations in the circuit of a recording channel can be made by changing the straps between terminals on the connection blocks without the necessity of touching the apparatus itself. All connections at these blocks are carefully soldered.

The transmission lines connecting the apparatus to the MDF are all of the standard lead-shielded type with twisted pairs of wires, the lines laid together and bound into neat cables. The MDF is enclosed in a grounded metal case as large as a clothes closet; and the cables all run through metal "gutters," the gutters and the lead shielding on the lines being likewise connected to the common ground system. High and low level speech circuits are kept as widely separated as possible. These precautions tend to prevent cross-talk between circuits and to minimize the pick-up of stray currents and similar extraneous electric disturbances.

The next chapter will continue the description of the main studio amplifying equipment and its operation.

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The problem of the plastic film has been solved, according to reliable reports, by Professor Koegel, of the Technical College in Karlsruhe. After many years' experiments he has invented a process which makes the production of the plastic film easy and comparatively cheap. Methods hitherto followed achieved their plastic effects by the production of a double series of pictures in complementary colors (red, green, for example) and then by the use of red, green spectacles. But to supply each visitor to a cinema with red, green spectacles made the plan impracticable. Professor Koegel's new invention results from a thorough study of the human eye which led to the conclusion that the same system which there produces the breaking up of light rays could be applied to the screen. As a result, he constructed a special screen with a nickel surface which, according to special calculations of light-ray action, produces certain definite ray reflections. It is probable that the new Koegel film screens will be fitted in a number of German cinemas in the near future.—*Christian Science Monitor*.

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HOLLYWOOD AND LONDON

[Phil Tannura departed for his home in England, May 15, after a sojourn of several weeks in Hollywood studying American motion pictures up-to-date. Mr. Tannura has been in England and France for six years and is at present associated with Gaumont-British as lighting expert with the title of Technical Adviser. He reports English production as coming fast and that the Americans at work there are doing their part in a creditable manner. Come again soon, Phil; everybody likes you here. Editor's Note.]

Said Mr. Tannura in a brief chat between studio jumps: "Six long years, but on second thought they were useful years considering the valuable experience I obtained on how several European companies conducted their various ways of producing a picture.

"France always gave me the impression of hectic business ideals, no matter what was done excitement had to be featured, but it was never shown in the finished picture, for in reality the tempo was slow even with an excited mind. Hollywood should think twice before they put money into French production.

"London gave me a new slant on production. The field is not crowded with over rated production heads, the thought behind each picture is sincere, with only one thing in mind and that the production of a good picture. No time is lost during the day checking up on chiseling friends; no such methods are carried on in England. Each and everyone has a particular job to do and if that job is done well you have no fear that someone is quietly 'cutting your throat' to get your job.


"Everyone is kept happy; your mind is clear of destructive thoughts and that is why I'm sure that some day London will be as popular as Hollywood in the production of pictures.

"Having come six thousand miles for rest and to see how much the great motion picture center had progressed in the matter of making motion pictures, I was sort of disappointed. The only departments that I can say have materially improved since I left six years ago are the camera and processing departments. Otherwise things are the same. The men in these departments should be recognized by the producers as they save thousands of dollars on every production.

"I want to say here and now that producers are making a grave mistake in the kind of pictures they are producing. Here is some free advice; instead of wasting so much time on ridiculous arguments regarding double billing and sex pictures as the cause of reduced box office receipts, why not wrack their brains and find out the real cause. Some years ago Hollywood was producing the kind of pictures that glorified America. What did the pictures do in foreign countries? They made the natives have a yearning and desire to see America. Then the producers turned to gangster pictures instead, showing all kinds of crooked officials, depicting every phase of life, which gave the impression that America was a terrible place to live in.

"The countries that were showing these American pictures were mighty happy, for it kept the natives at home to spend their money in their own home country. While in England, at the theatres, not only once, but many times I have heard people around me after viewing one of these pictures exclaim: 'Thank God the Atlantic Ocean is between us.'


"What does this really mean? It means that the enormous tourist trade that the American merchants depended upon has either stayed at home or gone to another country. Has anyone in America ever seen a foreign picture showing the bad parts of their country? Never! So, producers, take a tip from someone who has studied the situation and get back to the kind of pictures that show America as the greatest country in the world to live in."



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CONTINUITY IN AMATEUR PICTURES

(Continued from Page 25)

effect and having no bearing on the particular scene shown is bad because it only detracts from the scene and draws attention to the mechanics of the picture. It gives the impression that the cameraman is trying to show off his ability to get unusual angles or composition. The same applies to other cinematic effects if they are used improperly. It is the purpose of the detailed scenario plan to have each scene worked out in its relation to the others and the picture as a whole, so that each person connected with the making of the picture may work toward the same goal.

MORE LEAVES FROM TY'S NOTE BOOK

A novel department in the Paramount Studio is the Censorship Department, headed by John Hammel. Its problem is to struggle with the "Good Taste" aspect of pictures. This with-in-the-studio remedy should prove advantageous, and should do much to correct the situation. The keynote of the plan is to give the people what they want.

That sounds like the 77,000,000 persons in the United States who go to a movie each week have not been getting what they want.

Sixty-five percent of the theaters of the United States are controlled by eight major censorship territories. Each of these have the right by statute to cut any film declared offensive in their respective territories. That accounts for the fact that a picture viewed in one locality is different in another, and that also accounts for some of the hashed pictures.

Over and above the eight censor boards, there are 267 minor boards.

Then too, there are an uncountable number of non-official organization boards who have a voice in the cutting room.

It is difficult to determine who does the most damage to the interests of better pictures, the hashing of the censors, or the possible non-social element of pictures if left alone. The situation would not be so bad if the boards could get together on a code, but each group have their own particular pet peeves. These peeves cost the producers millions of dollars annually.

It is possible that a code could be arrived at if the members were trained in the social aspects of pictures; but, on the whole they are not socially trained persons. Instead of relying on conventional standards, they depend on their personal like and dislikes.

According to Jack Lewis, who is close to studio affairs, the censorship revisions and alterations of pictures since the first of the year have been greatly reduced because of a code of ethics adopted by the producers to conform to the general demands of the censor boards. The Producer Code of Ethics means a closer policing of story material before production.

Movie censorship began as a police and fire control activity.

Let's talk about something else.

Villa relics swamp Wallace Beery. With the release of Metro-Goldwyn-Mayer's "Viva Villa," Wallace Beery, who created this famous character on the screen, has been offered any number of things used by Villa. Beery has not availed himself of these opportunities because he has received no less than three hundred letters



Pictures above, looking from top to bottom: LEICA portrait by V. R. Haveman; LEICA aerial photo by G. J. Lewis; LEICA night photo with f:2 SUMMAR speed lens; LEICA indoor portrait by Dr. Henry Takahashi.

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The largest photo mural ever made, in effect, a photograph, nearly 600 feet long and twenty feet high will be installed in the Ford building at A Century of Progress. It will almost encircle the great central rotunda of the building.

The mural was conceived by Walter Dorwin Teague, leading industrial designer who is directing interior work on the Ford building in cooperation with Albert Kahn, architect. It is being executed by Kaufmann & Fabry, official photographers of A Century of Progress. The original photographs are being taken by George Ebling, Mr. Ford's personal photographer.

In size, execution and detail, the huge mural far eclipses anything of its kind yet achieved. It is a study in magnitude. It is in keeping with its subject and reflects the central theme of the fair-progress.

This huge mural requires nearly four-fifths of a mile of photographic paper forty inches wide. It consists of ninety-seven panels and will take forty men nearly a month to complete it.

More than fourteen tons of steel are being welded in a Chicago factory to form the framework backing for the panels. Upon this steel work, 12,000 square feet of Masonite will be attached. This will require 11,000 screws and nearly twenty-five gallons of a special cement. Upon the flat foundation so formed, 12,000 square feet of special canvas will be applied and the photograph itself mounted on the canvas. Approximately 200 gallons of paste will be used in the



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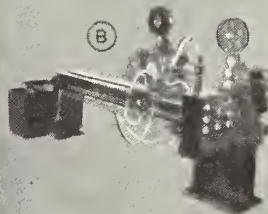
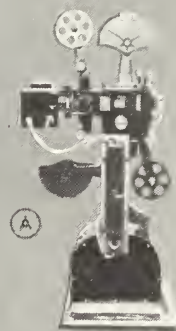
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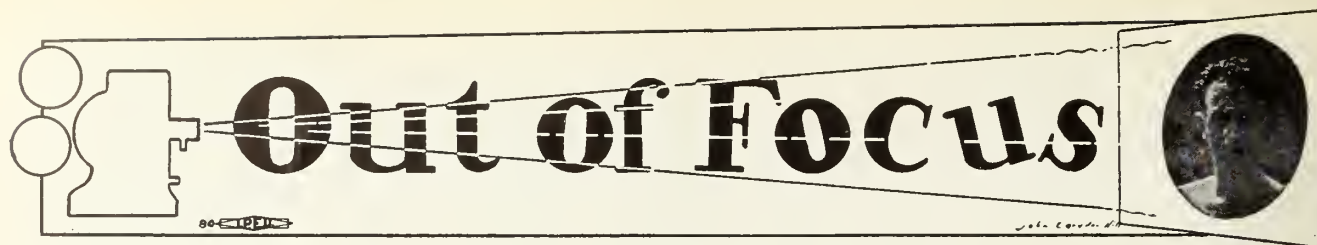


mounting. Each panel complete, including the framework, foundation and the photograph, will weigh over 400 pounds.

The entire mural will be made from a comparatively few photographs which will be selected from the hundreds of eight by ten-inch original views now being made. A special apparatus has been constructed in the Kaufmann & Fabry plant to handle the enlarging and printing of the mural. In the special enlarging machine built just to handle the mural sections, there are 7,000 watts of brilliant light.

When the panels are completed, they will be assembled unit by unit, to form seventeen settings or scenes in the photographic story, all tied together to create a coherent effect. Over half a mile of chrome alloy aluminum molding, one inch wide, will be used as a border for the mural. The designers have seen fit to allow the great picture to tell its own story without the aid of an elaborate outer frame. Special illumination is being developed by electrical engineers adequately to show the gigantic mural to the millions of visitors who will throng the Ford building.

Decision to call upon photography in this way to add a further impressive touch to the magnificent interior, followed previous installations of the kind, notably, the recent one in Rockefeller center although on a much smaller scale. The development of processes which eliminate the effect of "grain" in the finished product and the comparative simplicity with which an elaborate story such as that of the Ford Motor company can be told accurately and convincingly by the camera, were other factors favoring the mural, it was announced.



By Otto Phocus

DESIGN FOR SOMETHING

A cameraman married a film editor and this is what happened when he came home for dinner.

Dinner has been ready for two hours as the old master heads his car into the driveway and parks. The red porch light is burning, and while waiting for it to go out, suddenly realizes he is home, opens the door and enters. He is met by Goboe, the colored maid, and as he hands her his hat and coat he asks her for the light tests.

His wife comes into the hallway and he starts to shake hands with her, but discovers his mistake and says: "Hello, Sweetheart. What is the first shot?"

"The bathroom," she answers. "Get some of that dirt off of your face. You look as though the property man had been trying to age you instead of the props. What kept you so late; you are two hours behind schedule?"

"I had to make a few glass shots with the director, but I got away as soon as I could," he said.

"I understand," she replied, "but I wish you would not stop to drink when you know I have dinner prepared for you. Some of the things I have for dinner have been on the stove so long they should be re-cut. This dinner was not edited for suspense and as it is I will have to order reprints on butter. It has melted."

"Oh, don't worry, Honey. I'm sorry," he says as he makes a wipe dissolve with the dirt onto the clean towel. She walks over to him and he takes her in his arms and says: "Tilt your pan, dear," and kisses her, and they go into the dining room.

"Gee, honey, this is swell. Framed perfect, and what composition. Wouldn't this look great on a large screen with music? Just look at the color values. And that jelly would make a swell insert. What is it?" he asked.

"It is a two-color process I thought of—mint and strawberry. I hope you like it," she answered.

"I get it. A 56 and 23 combination. What that can do to the blues. Get it!" he asked her.

"Yes!" she agrees. "I get it, but let's get under production and have some food."

Goboe, the maid, brings in the soup, and when the Mrs. sees it she apologizes: "I am sorry, dear, but these noodles have been in the soup so long they are over developed."

"Pay no attention to it, honey," he tells her. "Just mark it a 'false start' and watch me reduce them," as he starts to eat.

"Have a biscuit, dear," as she passes the plate. "This is a new formula I ran across. The recipe called for twenty minutes, but I made a hand test and pulled them in fifteen minutes. Do you think they were timed right?"

"Yes, I do," he said, as he examined them. "I would say they were timed perfectly, but keep in mind that as you increase your temperature you must decrease your time."

"I know that, dear," she replied. "Why don't you try your salad?"

"What kind is it?"

"Raw stock; it is made from beets, carrots, and turnips. I used some mayonnaise for diffusion. I hope you like it."

Goboe brings in the roast and sets it in front of the old master. He takes out his viewing glass and examines

the roast through it. "I think you have over exposed the meat," but he says it with a smile.

"Is that so?" from the Mrs. "If you had been in the oven as long as this roast you would be burned up, too. But don't worry—it won't be wasted. We will have cold cuts tomorrow night and then the next night we will have 'news reel'."

"What's that?" he asked.

"You should know—it's your gag. News reel, a little bit of everything—hash to you."

"Oh, yeah, that sure is funny, but we are working that night and I won't be able to get home for dinner."

"Well, you'll get it for breakfast, then. You gave me orders to cut down on the overhead and use up all the short ends around here and when I do you try to run 'out on it. You'll get hash if I have to take it out to the studio."

"All right, dear," he replied. "I would just love it for breakfast. I have a six o'clock call in the morning and you know it's Goboe's day off. Nice of you to get up so early. Please dolly over the gravy."

"You will get hash," she threatens, as she passes the gravy, "if I have to make a stock shot out of it and keep it in the ice box until you do come home."

"All right," he replied. "But say—isn't this gravy a little thin?"

"Yes, it is. I didn't start it until I heard you coming in, and I'm afraid I didn't carry it far enough. I can have Goboe intensify it if you want me to."

"That's not necessary. It has everything in it, and she might carry it too far and make it too heavy. What happened to the potatoes?"

"They were too white and I had Goboe tone them down with butter," she explained.

The telephone rang, and they both yelled, "Quiet!" and when Goboe entered the room she announced it was Miss Mary calling.

"Old digs and dirt," he said. "I wonder what she wants?" Then he instructs the maid: "Tell her we are having dinner and we will give her an early call."

"They are having trouble again," said his wife.

"Yes, I know," he said. "I saw Harry at the studio. He came in while we were making the glass shots. He had about a dozen reloads and was wound up to four times normal and reeled into the other room and did a fade-out. He was as tight as the film in a camera on a sixty-foot buckle."

"That's a shame. I'll bet his wife plays a 'heavy' when he does get home," she sympathizes. "Can you imagine the sustained suspense around that house? If he was knocked loose from a couple of those sequences and developed a little more heart interest they would avoid a lot of those anti-climatic situations. As far as I can see, he has very little production value."

"Nevertheless," he replied, "he is the main title. He brings home the dough."

"Yes, that's true, but she rates the credit title in that production. I wouldn't be a bit surprised to see them separate. They have been out of sync for a long time."

"That may be, but even if they are out of sync at times, they manage to re-record and the next time they make an appearance are an example of perfect synchronization."

"Oh, well, why worry about them," she rejoined. "You look tired tonight, dear. Your eyes have dark shadows under them."

"That's this overhead lighting that causes that. A little front light will fix that up. How about a little drink?"

"I have some nice white wine," she suggested. "Would you like some of that?"

"No, I don't think so," he replied. "How about a little wild shot? Have we any?"

"Yes," she hesitatingly admits, "there is some of that dynamite you brought home the other night."

"What do you mean dynamite. That's as smooth as a Lubitsch picture."

"It would be if you could take the jumps out of it," she answered, as she arose to get the bottle and glasses.

"What are you going to do tonight?" inquired the old maestro, as he pours a long one.

"There is a pre-view at the Beverly. 'Henry the Eighth' is showing also and there is another feature. They have a Mickey Mouse and a news reel. All good pictures—and I hope they have a comedy. I'll get ready as soon as I can, dear," and she leaves the room.

"Geez!" exclaims the old focuser. "T-h-r-e-e features," and he takes another drink "A news reel," as he pours another. "A Mickey Mouse," as he grabs another. "A comedy," as he drains the bottle and goes into the other room and stretches out on the davenport.

The Mrs. dashes into the room and tells the old meanie she is ready. She tries to get him on his feet—and then discovers—he has emptied the bottle. Then she goes over to the closet, takes a blanket and covers him, and leaves for the picture show.

As soon as she drives out he gets up and goes out to the kitchen and pours a glass of the white wine.

"Goboe," he asks the maid, "do you like picture shows?"

"No, suh," she replied, "Since I've been working here I've jest lost my taste for 'em."

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A still from "Motor o' Mine," featuring Leon Errol. Director, Roy Mack. Lighting by Frank Murphy.

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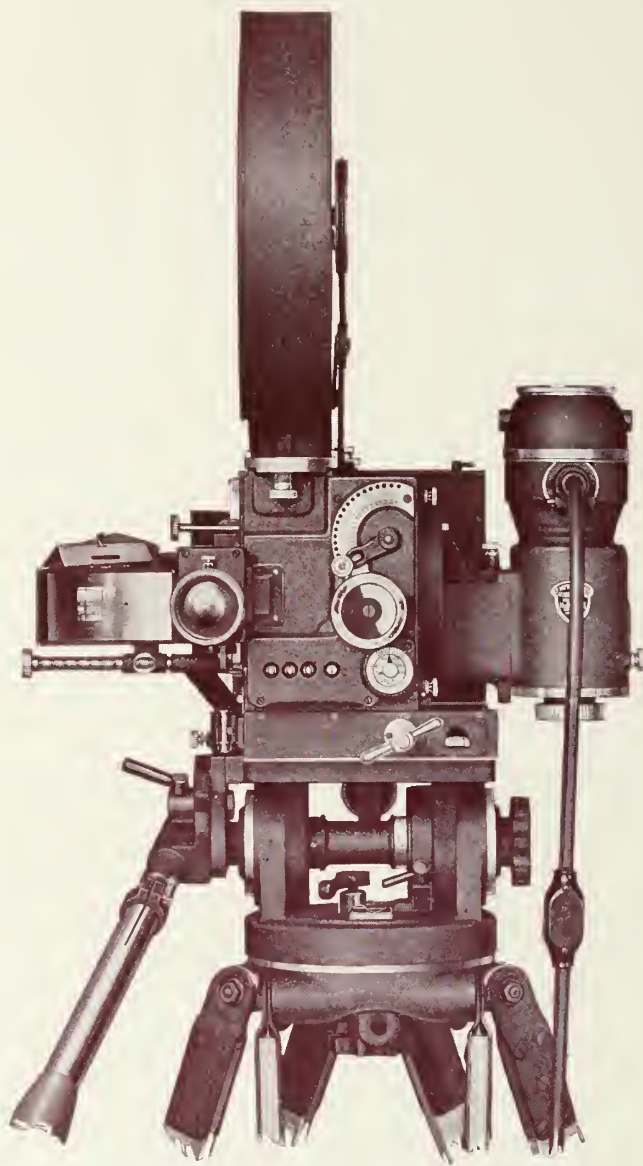
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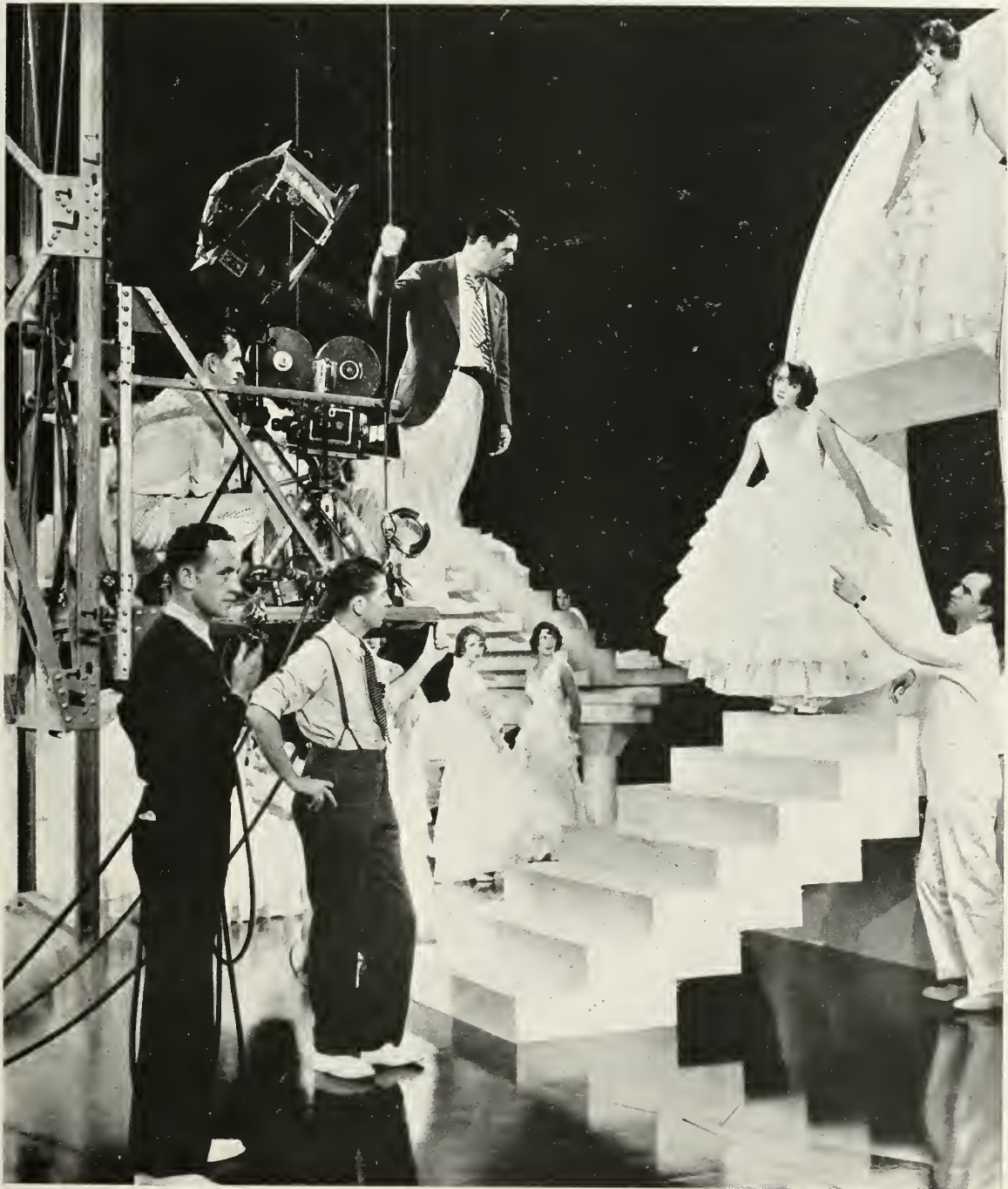
INTERNATIONAL PHOTOGRAPHER

HOLLYWOOD

XTH YEAR

JULY, 1934

VOL. 6
NO. 6



5 CENTS
A COPY

A Stillman's Shot of a Scene from Warner Brothers First National Great Production, "Dames." Left to right: Bill Derby, in charge of Public Address System; Frank Flannigan, Chief Electrician; Al Green, at the Camera; Sol Polito, Chief Cameraman; Ruby Keeler; Busby Berkeley.

PHOTOGRAPHED BY
BERT LONGWORTH

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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 6

HOLLYWOOD, CALIFORNIA, JULY, 1934

No. 6

SILAS EDGAR SNYDER, *Editor-in-Chief*

EARL THEISEN and CHARLES FELSTEAD, *Associate Editors*

LEWIS W. PHYSIOC, FRED WESTERBERG, *Technical Editors*

JOHN CORYDON HILL, *Art Editor*

HELEN BOYCE, *Advertising Manager*

A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing. Film Editing, Sound Recording, Projection, Pictorialists.

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This Magazine represents the entire personnel of photographers now engaged in professional production of motion pictures in the United States and Canada. Thus THE INTERNATIONAL PHOTOGRAPHER becomes the voice of the Entire Craft, covering a field that reaches from coast to coast across North America.
Printed in the U. S. A. at Hollywood, California



ANNOUNCEMENTS FOR AUGUST



Mr. Robt. Tobey, the brilliant young reporter from Columbia Studios, will break into print in our August magazine with a screed labeled, "Cinemacaroni." Look out for it.

Otto Focus (Charles P. Boyle)—well, just turn to his page in the August issue and see what you shall see.

Associate Editor, Mr. Earl Theisen will not announce his August title in this issue. "It's a secret," says Earl.

That clever story teller, Milton Moore, comes to our August magazine with a yarn of the studios entitled, "Hokum."

Augustus Wolfman will surely be on deck with another chapter on Miniature Camera matters. Yes, he lives in New York.

Walter Bluemel's 16 mm. yarns have created a lot of interest in the ranks of the amateurs. He will be with you again in August.

Karl A. Bardleben, Jr., F. R. P. S., contributes an article entitled, "Selling Pictures," for August. If you want to know something on that subject here it is.

Paul R. Harmer, whose articles on his chosen subjects are ex-cathedra, and which have attracted immense attention among Motion Picture technicians everywhere, will be among those present in August edition.

Associate Editor Charles Felstead contributes Chapter XI to his liberal education on Sound Recording. It is amazing how this series of articles had attracted attention in all parts of the world, especially in India and Japan.

OUR FRONT COVER

An exclusive shot by that genius of the still camera, Mr. Bert Longworth, of that wonderful picture "Dames," soon to be released by Warner Brothers-First National.

Author and supervisor, Robert Lord; screenplay, Delmer Daves; directors, Roy Enright and Busby Berkeley; first cameramen, George Barnes and Sol Polito; operative cameramen, Warren Lynch and Al Green; assistants, Jack Koffman and Louis De Angeles; stills, John Ellis; recording engineer, Stanley Jones; film editor, H. McLernor; art director, Bob Haas; chief electricians, P. Burnett, George Satterfield and F. Flanagan; chief grips, D. Mashmeyer and Harold Noyes; chief props, Howard Oggle and Gene Delancy.

Cast: Dick Powell, Ruby Keeler, Joan Blondell, Guy Kibbee, Hugh Herbert, Virginia Pine, Ronny Crosby, Zasu Pitts, Bess Flowers, and others.



In Memorium

LOUISE LINCOLN

1899 - 1934

•
*"Good and Faithful
Servant; Enter Thou into
the Joy of Thy Lord."*

—Matthew.

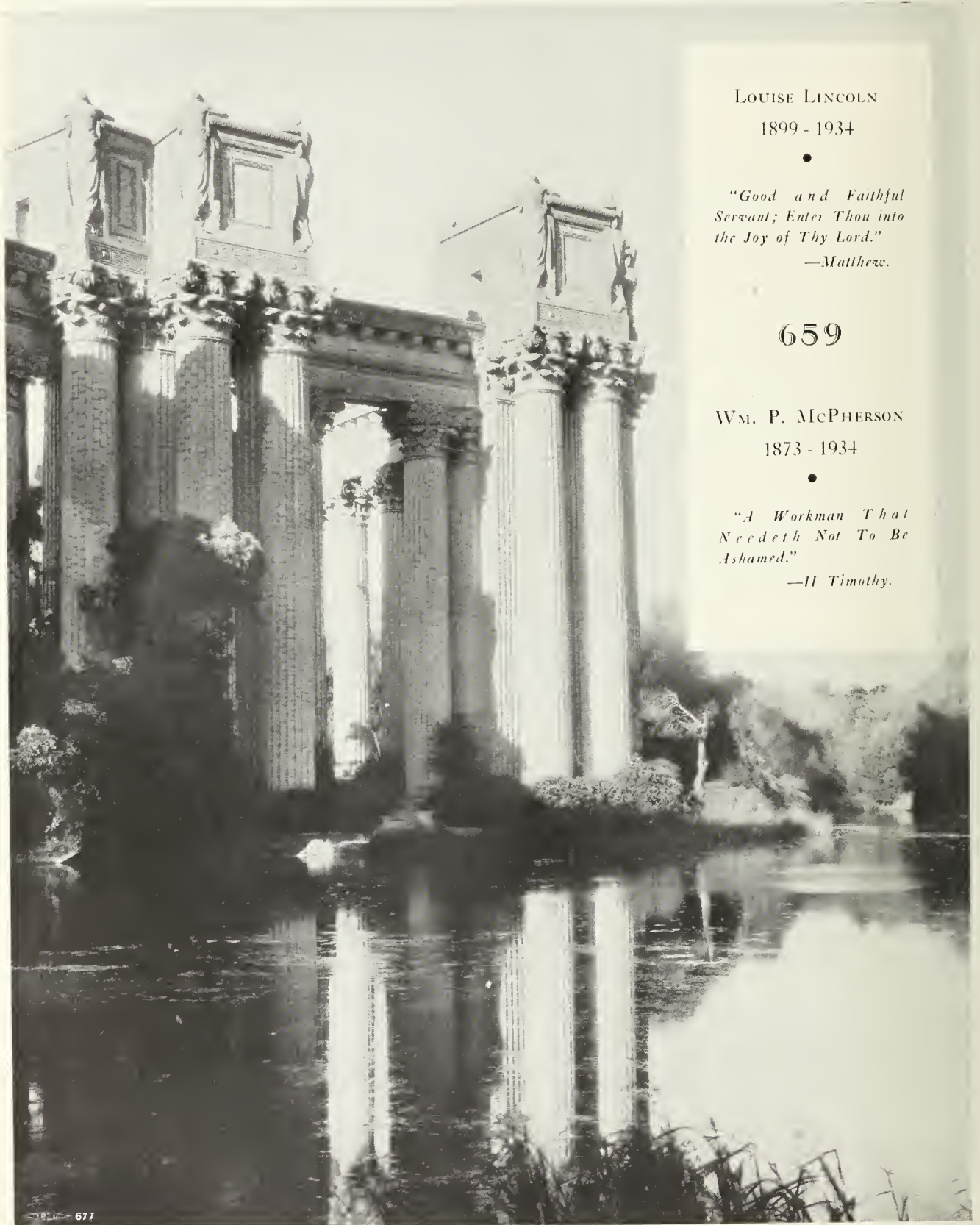
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WM. P. MCPHERSON

1873 - 1934

•
*"A Workman That
Needeth Not To Be
Ashamed."*

—II Timothy.



THE IMMORTAL PAL

By LEWIS W. PHYSIOC

[Lewis W. Physioc, who worked for Thomas A. Edison four and a half years, frequently has relieved the tedium of our editorial rooms with his reverential reminiscences of those days with "the old man," as Mr. Edison was affectionately called. Lew now calls him the GRAND old man and comments on the exalted simplicity of his nature, his beautiful attitude of comradeship with his employees, his easy

YES, I worked for this man who, it is said, invented the moving pictures—even the talking picture, for his first experiments were a combination of his phonograph and the moving pictures. I believe he really did this great thing, for I have seen him do enough that is important to mankind to confirm my belief.

I was engaged, with William Wardell (business manager) and Daniel Higham, an engineer, to assist in developing Mr. Edison's ideas of talking pictures, then known as The Kinetophone.

He fitted us up a fine little studio in 43rd Street near 11th Avenue, New York City. It embodied every essential, even to a kitchen, dainty table service and an Italian chef.

We spent many joyous days experimenting with all sorts of materials for making diaphragms for recorders, adjusting the sapphire styluses and carefully noting down the formulae.

When we put together a satisfactory recorder we called in a "bunch" of actors, who showed more "horn fright" than dramatic ability, and proceeded to make a picture.

Then came the great day when we were to show "the old man" something of what we had been doing.

One day Wardell called John, the chef, and said:

"John, the old man is coming over today . . . you know, he likes spaghetti . . . so, do your stuff."

John was immediately thrown into a flurry of excitement. There was much coming and going, with his arms filled with paper bags and packages of delicacies, meticulous polishing of silver and chinaware, spreading of snowy white table cloth, etc.

Finally Mr. Edison arrived. He entered without any fuss or ceremony—much as any man might have done. We were suddenly aware of him standing in the center of the studio looking around at the various appointments. He was probably estimating the manner in which we had been spending his money.

He asked Wardell who was the long-haired fellow and what he did.

"Oh, that's Physioc," answered Wardell, calling me over and presenting me, "he does everything."

"Everything?" repeated Mr. Edison, looking at me in a manner that seemed to express some doubt that a man who could do "everything" could do any one thing well.

"Yes sir," continued Wardell, "he paints our scenery, runs the camera, develops the films, plays the cello—everything."

"The old man" looked around and scanned some of my masterpieces, looked at me and nodded approvingly.

The session opened in his favored form—a bite from his plug and a round of stories.

We had an able draughtsman of whom Mr. Edison was very fond, because of his ability as a story teller. Percy Eggleston started in:

"I just heard a good one," he shouted at Mr. Edison.

"Let's hear it," answered the old man, putting a megaphone to his ear.

The joke brought a hearty laugh.

"I've got a better one than that," he said, and he told a "wow."

approachability—there was no antechamber where sat an implacable sentry to ask: "What's the nature of your business?" One had but to knock at his door and receive his cheery: "Come in." We have prevailed upon Lew to forego his aversion to that little personal pronoun and record some of those experiences.—Editor's Note.]

After luncheon we showed him a picture. He sat with his elbows on his knees, holding a megaphone to his ear. His glances shifted alternately from our faces to the screen. Suddenly he said:

"It's too loud!"

Danny Higham coughed—an apologetic little cough—"Too loud, sir?"

"Y-e-s . . . If I can hear it that well, it'll drive 'em out of the theatre."

He studied it again.

"It matches all right, 'tho," he conceded, and we all felt easier. Then he squirmed around at Danny and said:

"Too many echoes . . . Too many echoes . . . You've got to get rid of those echoes."

We then showed him a picture in which I played the cello. After he had studied it for a while he turned to me and said:

"That's pretty good . . . You know, that instrument is very difficult to record."

But he didn't like those echoes. So one day he moved us over to West Orange, and installed us in a circus tent. We got rid of the echoes, all right, but had other troubles. It was fine in the summer time, "but oh, my! . . . in the winter time." At one time, during the month of February, Danny Higham was wrapped in his fur-lined overcoat, trying to shave off one of the recording cylinders and the wax was so brittle it splintered away like glass. I shivered in everything I could get on and, endeavoring to paint a drop, the sizing in the color froze in the brush before I could get it to the canvas. Wardell spent most of his time hanging around the big stove in the middle of the tent. John, at his cooking stove, was the only one who could accomplish much, and this he did to the cheer and comfort of us all.

And the old man kidded us . . . but encouraged us.

He was an indefatigable worker. A lazy man would have been shamed by his very presence.

One morning, Percy Eggleston and I had occasion to go over to his laboratory, where he had been working days and nights in intensive research. As Percy expressed it "the old man was trying to find the 'bugs' in his new Diamond Disk Phonograph."

He must have found the bugs all right—he never gave up until he did, for he was stretched out on an old table whose top was covered with cold, hard zinc sheeting. He must have been fagged out before he lay down, for he slept soundly. He had on nothing but his trousers and undershirt, the latter being much bedribbled with tobacco juice. He must have been away from home for some time for his stubby gray beard stuck out in energetic bristles from his worn face. No wonder his good wife had frequently to drag him away sometimes for the comforts of a shave and the neglected breakfast, so persistent was he. No wonder this man achieved things. Men speak of working hard—let them learn from Thomas Edison. I will always remember, with reverence, "the old man" lying there on that slab of zinc sheeting. If there is anything of patience and perseverance in me it was inspired largely by my knowledge of his character.

He always had a cheery word for everyone who passed

(Turn to Page 26)

"THE HOME OF KODAK"

A Follow-Up of "Good Housekeeping in Train Load Lots," Published in the June Issue of International Photographer

HOW EASTMAN FILM IS MANUFACTURED

MILLIONS own snapshot cameras . . . The motion picture industry consumes more than 200,000 miles of film annually. . . An increasing number of home movie cameras are making fascinating records of intimate family life each year. . . Por-

Along another thoroughfare flanked by ivy-covered walls we catch a glimpse of an imposing structure that overlooks the main entrance to the Park. This, our guide answers, is the center of research for the Kodak organization. From here, we learn, has come the introduction of home movies, of Kodacolor, of film that can take pictures from hundreds of miles away; here, too, have been discovered many hidden complexities of photographic sensitivity; and here, as well, numerous patient studies have been made that have given photography and the motion picture art a scope undreamed of when they first came into being. The Kodak Research Labora-

Before George Eastman began his work of simplification, the photographer had to carry a portable darkroom and sensitize his own glass plates just before he took a picture.



trait and commercial photographers must be supplied with, not one type of film and paper, but scores, to meet the various exacting needs of their work. . . Medical and dental radiologists diagnosing the infirmities of human anatomies and teeth, x-ray technicians examining the soundness of metals, building materials, and aeroplane parts, use a huge annual acreage of their recording medium. . . Photo-engravers, bankers, astronomers, aviators, draftsmen, detectives, engineers, microscopists—a great variety of professions and activities have need for the photo-sensitive materials that Kodak Park supplies.

When we visit Kodak Park we are inspecting a manufactory that is unique.

Let us take one of the passenger busses that depart every quarter hour on routes carrying those with business, and perhaps carrying us as visitors, to the factories and offices of this expansive area. The busses are a necessity, for there is a mile and a half of distance from the entrance gate to the remote buildings of the many that fit into the scheme of this city of well seasoned brick and ivy.

Down one street we observe a solid masonry wall with no window breaking its expanse. Behind it, we are informed, great, white machines with many precise moving parts are turning in dim light or none, coating the transparent, flexible film base with the "emulsion" that is sensitive to light and to visual images.

The famous twin chimneys of Kodak Park—landmarks that give dominating evidence of the tremendous power, heating, and refrigeration systems that consume 700 tons of coal daily.



tories constitute, in truth, a research university in the sphere of photographic science.

There, on our right, is a building in which silver, by modern alchemy, is turning into materials far more precious to this civilized era—motion picture film to entertain every week nearly as many persons as the population of the United States, spools of Kodak Film and Ciné-Kodak Film for pleasure and sentimental record, sensitive substances for the camera craftsmen who satisfy many civilized needs and for scientists who use photography in ferreting out the earth's remaining secrets, recording surfaces to capture the pictures that illustrate newspapers and magazines the world over—film and sensitive paper for every conceivable purpose.

Let's begin our inspection by seeing what happens to the silver. The treatment of this raw material will give us something of an introduction to Kodak Park's manufacturing methods.

Comparatively little bullion is stored in Kodak Park at one time. Every day, under heavy guard, a shipment arrives to maintain the supply. A single safe, holding about three tons of bars, which is less than a week's supply of raw material, is the repository from which the silver flows.

Into every bar a hole is drilled, a record number is punched. Chips from the drillings are promptly tested by the department handling the silver and, in addition, by the Industrial Laboratory, which is charged with the responsibility for the quality of all raw materials. Impurities are rarely found in Kodak Park's silver; yet inspection continues year after year. If a trace of copper or iron were permitted, unchecked, to go into the manufacturing stream, endangering photographic effectiveness, later tests would discover and eliminate the result, but time and other materials would have been wasted in the meanwhile. Production schedules would have been interrupted. Therefore, Kodak Park tests every ingredient as



The Research Laboratories occupy this spacious building near the Park entrance.

we are witnessing wanton destruction. With our realization of the worth of silver in its original form, we can not avoid a shock at seeing the bars of metal dissolved in nitric acid until all is fluid and nothing solid remains. The nitric acid, it is worthy of note, is made at Kodak Park under scientifically controlled conditions leading to purity of grade.

The silver nitrate solution we have seen compounded is siphoned from its porcelain bowls into troughs, whence it runs through glass tubing to an evaporating room on the floor below. There, men wearing rubber aprons and rubber gloves guide the flow into other bowls, which are set on heated tables. The heat drives off water from the solution; and, when the concentrated solution cools, the silver nitrate crystallizes. Silver nitrate in this form would be more than pure enough for most uses—but photographic manufacture is an exacting master.

Consequently, the crystals are once again dissolved in distilled water and once more crystallized. This operation is repeated many times—until all impurities are removed.

Final evaporation leaves crystals appearing like soap flakes but more vitreous and brittle. Then come careful drying processes.

Silver nitrate is sensitive to light—a fact ascertained by Arab alchemists seven centuries before Columbus discovered America—gradually losing its whiteness under the influence of the sun's rays. It is this basic chemical fact that makes photography possible.

The discovery of the transparent, flexible base of photographic film constitutes the Eastman organization's greatest contribution to photography and motion pictures, and in this connection a humbler material now enters the process of film-making.

The film support, or base, is composed of cotton that has been treated with a mixture of nitric and sulphuric acids to render it soluble in a mixture of solvents, the chief of which is methanol (wood alcohol). The "dope" thus obtained, having the consistency of honey, is spread on the polished surfaces of great wheels that run continuously, night and day, month after month. Heat around the giant wheels drives the solvents from the "dope" and permits the nitrated cotton, or cellulose nitrate, to assume the form of a thin, transparent layer on the surface of the wheels. After various convolutions within a machine, a wide strip of finished film base emerges and is wound up in a roll like newsprint paper.



In coating film base, dim colored lights or total darkness is required.

well as finished products and products in process of manufacture. Of the thousands of employees at the plant, hundreds devote their whole time to the careful inspection of materials at every stage of evolution into finished photographic products.

Observing the first step in converting bar silver into photo-sensitive materials, we shall instinctively feel that



Evaporating silver nitrate solutions for crystallization—repeated until a high degree of purity has been achieved.

Consider the steps that must be taken, collateral with the manufacturing process so briefly outlined, to insure the quality of the resulting film support.

Samples of all cotton coming into the plant are tested before use. Three potential variables are thus governed. . . . Cotton, before being dumped into the nitrating machines, is accurately weighed. Variables of the nitrating acid, in addition to its temperature and amount, need to be controlled—and tests accomplish this. Nitrated cotton, immersed in water, flows only through tile pipe lines, to avoid contact with metal. In the purification and storage building to which the flow is conveyed under a street and a railroad track, the tanks are made of material inert to the ravaging action of acids so that no impurities may be introduced at this point.

The substance inelegantly called “dope” at Kodak Park, after the cellulose nitrate has been thoroughly dissolved by its solvents, actually is the direct culmination in chemical purity of the careful work of hundreds of chemists and skilled workmen; and the result of study and improvement by two generations of engineers and research scientists. The physical condition of the material, as distinguished from the chemical, becomes evident when one sees the film base winding through the great machine, so flawless and transparent as to be virtually invisible.

Cellulose acetate for the “safety film” of home movies and radiography results from similarly controlled manufacturing processes at the Tennessee Eastman Corporation’s plant in Kingsport, Tennessee, close to the source of supply for raw materials. In the manufacture of “safety film,” acetic acid and acetic anhydride are substituted for nitric and sulphuric acids to treat the cotton. Subsequent conversion of cellulose acetate into film base is carried on at Kodak Park, just as in the case of cellulose-nitrate film.

While we are close to the subject of cellulose acetate made by Tennessee Eastman for Kodak Park, let’s indulge in a conjecture. It is not unlikely that the socks—or the dresses—of persons reading these words are of that very material. . . . Not only film,

but also Eastman Acetate Yarn, is made from cellulose acetate produced in the large plant set among the hills of Eastern Tennessee. The yarn mill there, the supplying of acetate for safety glass, the manufacture of Tenite, an acetate molding composition for making combs, automobile fittings, and a large variety of other products—all that is another story.

Gelatine is used in large aggregate quantities to suspend the emulsions’ silver salts evenly on the film base—but gelatine for photography must be chemically purer than that used for food. Gelatine for Eastman film and photographic paper is produced principally at Kodak Park and by the Eastman Gelatine Corporation at Peabody, Massachusetts. Patient processes of chemical treatment in hundreds of covered concrete tanks prepare animal-hide remnants for cooking. The gelatine, after washings, boilings, filtration, solidification, blending, and removal of any chance metal content, joins the silver nitrate in the emulsion rooms.

It may be interesting to pause now and catalog the most important raw materials of film: cotton from sunny Southern fields; saltpeter from mines in Chile or produced synthetically from the air in the United States; sulphur from Texas mines; camphor from Formosa; wood alcohol distilled from the Tennessee Eastman Corporation’s saw-mill waste; hides from cattle that once grazed in Texas or the Argentine; silver from Mexico; and potassium bromide from the Great Lakes brine deposits.

The making of light-sensitive emulsions—the layer of film that actually takes the picture—is a highly diversified and extremely delicate process. The Eastman organization, in fifty years of experience, has turned an art depending on chance and mood into an exact science. The genius of pioneering emulsion makers, combined with the manufacturing talent of picked chemical technologists, has established methods by which uniformity is insured to Kodak photo-sensitive materials. The press photographer snaps sharp pictures of racing planes in a thousandth of a second; the studio photographer makes softly molded portraits with exquisite care. Both require types of film that will faithfully respond to their skill, every time, year after year.

Chemical and physical control of silver-salt crystals, together with the addition of extraneous materials, makes emulsions “fast” or “slow,” “contrasty” or “long-scale,”



A battery of machines converting fluid “dope” into endless sheets of the familiar transparent, flexible film base . . . almost invisible as it passes over the brightly polished rolls that may be seen through the heavy plate glass windows. The scale, the silence, the cleanliness of this operation are characteristic of Kodak Park.

Please mention The International Photographer when corresponding with advertisers.

sensitive to light from various parts of the spectrum, or photographically responsive in still other significant ways. Combinations of these properties in various degrees result in the production of nearly 100 types of film by Kodak Park. Most types of x-ray film, and the popular Verichrome Film for use in Kodaks, are actually double coated, with two separate emulsions.

In the years following the first Eastman production of transparent, flexible film base, that material was made and sensitized on glass-surfaced tables 200 feet long. Now this work is done on great continuous machines.

Of photographic paper there are even more varieties than of film—250 types, distinguished by purpose, degree of contrast, color, weight, texture, and action under development, produced under conditions similar to those of film-manufacture.

It is a remarkable fact that even the red and black paper sheathing the familiar cartridges of Kodak Film, only to be thrown away after the film is developed, is of a higher grade than the best stationery of discriminating business houses; yet a similar paper sensitized to print photographs would degenerate rapidly. Because the highest-grade commercial paper stock is unsuitable, Kodak Park manufactures its own paper for sensitizing.

Paper is not ready to receive the emulsion simply after manufacture and a period of seasoning. Baryta coating intervenes—treatment with a substance containing principally barium sulphate—and accomplishes two main objects. It helps to separate from the paper the chemical constituents of the emulsion later to be applied, serving as a barrier against the possible deterioration of paper that already has been made as proof against deterioration as possible. Secondly, it gives the necessary gloss to glossy paper and controls the degree of gloss on matte-surface papers.

One of the most important tests at Kodak Park, to the traveler, occurs in an incubator that simulates equatorial temperatures, from the cool of morning to the heat of noon and back again.

A military metaphor suggests itself for Kodak Park. An army is helpless without its services of supply. The production forces of this city of light and darkness need constant support from large and elaborately regimented auxiliary "troops."

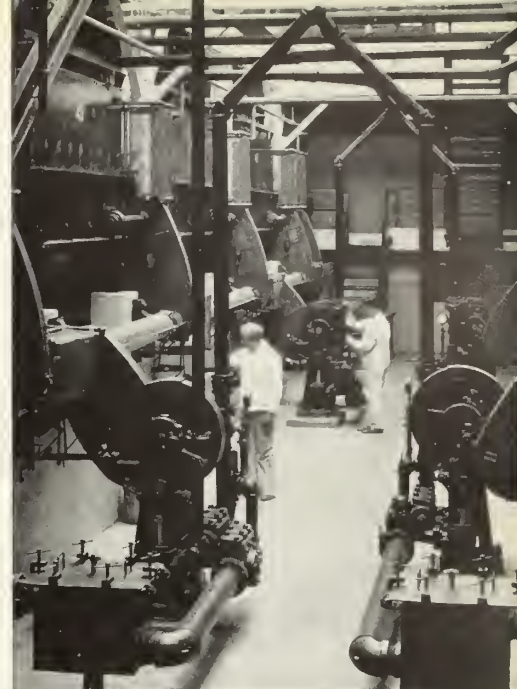
Cores and reels are needed to wind film on. A metal- and wood-working plant makes them. . . . Cartons and containers are necessary. A large printing shop and a paper-box factory are complete within the Park. . . . Artificial leather is required to cover hundreds of thousands of cameras. Kodak Park produces it. . . . The red and black paper mentioned earlier is essential for the protection of roll film, as well as black paper for packing other light-sensitive materials. A second paper mill, the "commercial mill," supplies these needs.

Think of the machinery repair work to be done, of the 6,000 electric motors to be serviced, of the plumbing and steamfitting and carpentry activity involved in maintaining a plant of 80 buildings, of the special machinery to be constructed for Kodak Park's unique manufacturing purposes. A large corps of men skilled in these functions is on the job constantly and the various mechanical shops are a story in themselves.

Vast quantities of supplies, from coal to platinum, must be bought and tested. One department buys, another tests.

The Kodak Company has its own waterworks with a capacity for drawing 31,000,000 gallons a day from Lake Ontario, five miles away, a filtration plant on the lake shore, and a 5,000,000-gallon reservoir at the Park.

The shipping departments are important, for the Park's great production must be kept on the move. Truck-



Mixers require hours to bring about the proper solution of treated cotton in wood alcohol and other solvents. The resulting "dope" is passed through filter presses before being turned into film base.

ing, maintenance of roads and grounds and 15 miles of railroad trackage, even janitor service, constitute major projects. A hundred freight cars a day are "spotted" at the loading and unloading platforms.

Kodak Park has its own fire department. A laundry is maintained. A safety department acts continually to eliminate hazards to employees and property.

In further ramification of this plant's activity, numerous materials must be provided in addition to film and paper to satisfy the photographic needs of a hemisphere—chemicals for developing, fixing, toning, bleaching, intensifying, and other mysterious manipulations of photographers, amateur and professional. One photographic chemical known as "Pyro" is made of "gallnuts" brought from China. These "nuts," imported in large quantities, are really excrescences resulting when oak trees are stung by flies.

Nearly 3,000 organic chemicals are stocked by the Kodak Research Laboratories. Although this aspect of the Kodak Company's activity is not widely known in non-scientific circles, the chemicals provided are used in hundreds of universities and research laboratories where the future progress of science and industry is steadily being worked out.

Sheeting similar to film base, and solutions similar to the "dope" from which it is made, are sold to many customers manufacturing a diversity of products ranging, say, from cakes and aeroplanes to poultry supplies and electrical equipment.

Among the Eastman Kodak Company's employees 245 of the 572 principal occupations listed by the census are represented, in addition to many jobs peculiar to the photographic industry. That numerical statement is scarcely needed to send us out from Kodak Park conscious that we have felt the pulse of a complex industrial organism. Henceforth, also, we shall find new meaning in the historic Kodak slogan, "You press the button, we do the rest."



THE MAX FACTOR MAKE-UP FACTORY

By EARL THEISEN

Honorary Curator L. A. Museum

(Associate Editor of International Photographer and Member of the Faculty of the University of So. California as Lecturer in the Dept. of Cinematography.)

My first impression when I visited the Max Factor Make-up factory was one of whiteness. Everything is painted white and everything is spotlessly clean. The janitors there must be busy men; in fact, the one I saw busily polishing a corner had a virtuous expression as he jealously rubbed away.

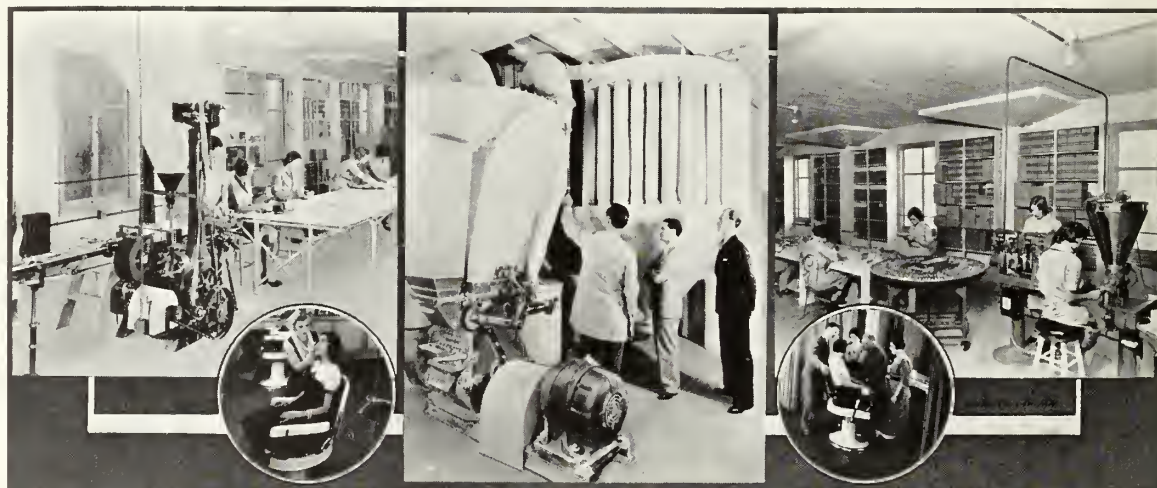
The employees, too, leave the same impression. They wear spotless smocks and there is a clean cut and clearness of complexion that one would expect in a factory where make-up is made.

Each morning before the employees are permitted to start their tasks, a trained nurse inspects each individual for any illness or skin disease. This inspection is surprisingly detailed. The nurse, by the way, has a three room hospital in which is much scientific looking equipment. The day I was there the nurse was proudly showing the latest acquisition to her hospital, an infra-red heat lamp. The lamp was set over a bed which seemed rather inviting until I looked at the nearby cases of instruments.

Lining these containers is indicative of the detailed care given each operation. The container is first inspected, then the bottom paper is inserted; it is then inspected again and adhesive added to the walls. After another inspection the wall paper is put in place, then it is again inspected and the wall papers secured in place. Two persons again inspect the can and it is ready for filling. Each of these inspections and operations is conducted by a different person. It seems that at least half the employees are inspectors.

The grinding of the powder is done in a separate room by a machine especially made for Max Factor. The fineness and weight of the powder is controlled by gravity. Air under definite pressure is forced into the grinder at a certain point which sorts the powder grain and eliminates the grains of undesirable weight.

Similar care is given the mixing and making of unguents. The pigment and other coarse material is first ground between polished rollers in a machine that is some-



Left to Right: Filling powder boxes; grinding face powder; filling collapsible tubes. The Circular Inserts: The application and experimental room. Max Factor shown in center of right circular insert.

The factory is laid out efficiently, so that an article starts at one place and progresses through various stages until it is packed and sealed ready for the consumer. In no place during the process is the make-up material touched by the hand.

In the packing of face powder, the empty boxes are first inspected and then put on a device where each box is vacuum cleaned before being put on a conveyor belt which takes it to a filling machine. After the filling machine, the box is inspected by a girl, who looks at each box as if it were her first biscuit. The box is then sealed by a label applied under pressure. In the meantime it has gone through four inspections. It is then ready to be put into a cellophane container. In another part of the factory the tin outer protectors are being lined with paper.

what similar to those used in ink factories. After the material is ground sufficiently fine it is taken to vats where it is mixed with the desired waxes and oils. These oils, by the way, are not animal fats, but natural vegetable oils. The vats are heated to a correct temperature by electricity. The heat is controlled for the reason that in mixing a series of chemicals, such as would compose a facial cream, the compounds are affected by variation or too high temperature.

The compounds are heated to a liquid form, then continuously stirred by a mechanical arm for a period of time to insure thorough mixing.

Max Factor has developed a number of special machines to handle his make-up. For this purpose he has a mechanical department whose sole purpose is to develop

whatever equipment is needed. One device perfected is the labelling machine. The machine will label any size or shape bottle and, one label not being enough, it will apply as many as three on any single bottle.

Another machine is a capping apparatus for screwing on caps. It is constructed so a cap is screwed on to the right tightness.

There are a number of departmental research laboratories. Each bit of raw material is carefully analyzed for composition and purity before it is accepted from the manufacturer. The color pigments are studied under colorimeters, while the other chemicals and drugs are chemically analyzed or studied under a microscope. There is also a number of research laboratories whose purpose is to develop new formulas.

In the perfume department there is row after row of shelves extending to the ceiling laden with containers of perfumes and essential oils. The perfume materials are obtained from all over the world and they are shipped, as a rule, in metal containers, because of the risk of breakage in transit. The perfume oils very often cost as much as five cents a drop. The containers are copper or copper lined for the attar of Roses and citrus oils, while the other oils are contained in aluminum and tin bottles. When they arrive they are elaborately sealed and covered with government tax stamps.

As a rule the essential oils are used in compounding the makeup; however at times the synthetic oils must be used. When a crop fails or the essential oils are of poor quality, then the laboratory-made perfume oil is used.

For blending and matching in order to maintain a standardized powder and make-up color, both the colorimeter and artificial daylight apparatus is used. The daylight apparatus was specially made by Western Electric and gives an unvarying light that permits easy matching by the visual method. The tests are conducted in a dark room.

In their hair department, under the guidance of Perc and Ern Westmore, is made the various wigs and other hair creations used in the motion picture. They have hair in all shades and textures from all parts of the world. Usually the hair used in wigs is imported from the peasants of Europe, many peasant women earning a considerable income growing hair. Certain kinds of hair costs Max Factor as much as fifteen dollars an ounce; it is kept in rows of drawers in preservatives.

The various period productions where wigs are used are contracted for by Max Factor. He maintains a staff whose purpose is to authentically make the hair creation to match in both style and personality in keeping with the period in which the picture is set. When I need a wig Max Factor will make it.

In 1908, Max Factor started in business in Los Angeles. At that time he had a small establishment that manufactured make-up for both society and the motion picture. Max Factor when only a ten year old boy in Russia, served as an apprentice to a Doctor. In this connection with the Doctor he acquired a knowledge of chemistry which he improved with the passing years.

When fourteen, he became associated with an operatic theatrical troupe. With this troupe he travelled everywhere, finally to St. Louis, where he made make-up material and perfume. Shortly thereafter he went to Los Angeles.

In 1908, make-up for the motion picture, was of a pinkish color. This make-up in connection with the then used Orthochromatic film emulsion gave a chalky white face on the screen. Also the heroes and heroines accentuated their lips and eyebrows with heavy colors. The accepted hero then usually had cupid bow lips.

As the art and technic of the motion picture improved, Max Factor was in step with the improvement. His close



Late portraits of Richard Dix in a character pose from his latest production, RKO-Radio picture drama, "His Greatest Gamble." Edna May Oliver, age 86, 1929 (Jan. 28, 1932), and as she portrays the character of Maude in RKO-Radio production, "We're Rich Again."

association with the industry made possible the present standard panchromatic colors.

The panchromatic make-up used today in the motion picture was introduced subsequent to a series of experiments with the Eastman Panchromatic emulsion, held at the Warner Brothers Studio, in February, 1928. At that time a related standard between Mazda illumination, make-up, and the panchromatic emulsion was studied. Very shortly thereafter the Panchromatic make-up color was adopted.

Before the introduction of the standardized panchromatic make-up color, Max Factor was confronted with a number of problems. His make-up, even though visually appearing to be the natural flesh colors, must have sufficient color balance for the panchromatic emulsion. That is because the panchromatic film does not "see" or record the colors as the human eye sees them. It is the problem of make-up to bring the photographic recording to the visual balance.

That problem would be simple if a second situation did not present itself, that is, the psychological aspect. A suitable color balance in make-up for a correct photographic recording would result in a muddy-brown make-up color. If two players were doing a heavy scene and had to look at each other with undesirable or unnatural brown colors on their faces, a certain emotional response would be inhibited. Max Factor had to incorporate enough of the photographic colors in his make-up and still hold the colors of the make-up in the range of natural flesh colors.

Also the unguent form in collapsible tubes was adapted, because it permitted easier and thinner application. This soft form was a distinct advantage over the older stick form which was either too hard in cold weather or would melt in hot weather. Too, unsanitary open stick gathered dirt.

Through the enterprise of the Max Factor Company, the application of make-up has been standardized. Their research laboratories solve whatever problems arise.

MINIATURE CAMERA PHOTOGRAPHY

Tricks in Enlarging

PROJECTION printing, or enlarging, to which we resort in miniature photography, allows the photographer to easily manipulate his prints. This is made possible largely by the working distance present between the negative and the paper in the easel. In contact printing, our negative and paper are placed into the printer in contact.

Before going further, I wish to review some points which have been mentioned in a former article, but whose importance demands that they be impressed upon the photographer by the time tested method—repetition.

The first is cleanliness. It is very disturbing to examine an evening's batch of prints and find that they are covered with numerous markings due to smudges, dust particles, and small hairs on the negative. Of course, many such disfigurements can be eliminated by spotting the print, but why not avoid them when that is possible; and then again, it is not so simple to spot one of those "rugged road" markings produced by a hair of relatively long size on the negative carrier, or on the film.

The negative carrier should be wiped with a lens tissue or a soft chamois before every new roll of film is inserted into it. I have found a soft camel's hair brush to be quite handy. Every time I move the roll of film so as to place a new negative in the printing position, I remove the carrier from the enlarger and examine the film for dust particles. A few wipes with the camel's hair brush easily removes them.

Before a roll of film, a short film strip, or even a single negative, is inserted into the enlarger, it would be well to treat it according to the following "anti-dust and smudge procedure:"

1. Wipe both sides with a soft, clean chamois to remove small hairs and dust particles.
2. Clean the film with carbon tetrachloride or a similar cleanser to eliminate grease smudges. It is best to keep a chamois skin steadily soaking in a jar of cleaning fluid for this purpose.
3. Wipe the film again with a clean chamois to give a final polish and to insure removal of loose foreign particles.

When you have submitted your negatives to the above treatment you are assured of the removal of most avoidable print-marring influences. Even after this procedure, it would not be amiss to wipe the portion of the roll of film to be placed in the carrier each time the roll is shifted to place a new negative in the printing position.

A second precaution which I wish to impress upon the miniature camera photographer is to avoid hard papers, especially glossy hard papers, whenever possible. As I have mentioned in a previous article, such papers have a tendency of showing up the grain in the negative. Recently, I was making a number of prints from a negative one of which was on a glossy hard paper representing a nine times enlargement, and another on a soft matte paper (developed in a contrast developer) which was a fourteen times enlargement. The nine times enlargement upon the glossy, hard paper was visibly grainy, whereas the fourteen times enlargement upon the soft paper did not reveal graininess. Of course the matte surface of the paper helped to conceal the grain.



By AUGUSTUS WOLFMAN

This fact speaks for itself. We should not, however, condemn hard papers. There are occasions when a weak negative with flat tones can be made to yield a presentable print with the aid of a hard printing paper. The appearance of graininess in such a print will, of course, be dependent upon the degree of enlargement and the type of fine-grain processing to which the film has been subjected. Wherever possible, the use of soft and medium papers, in conjunction with contrasty paper developers, will favor the production of grainless prints.

Now to return to some special methods to employ in enlarging. Frequently, we encounter a negative in which certain portions are quite heavy and dense, whereas others are lighter. Even though a paper of a comparatively long tone range is chosen, the light and dense portions cannot both be reproduced with success: one must be sacrificed for the other. If the print is exposed for the light portion, the dense part will not show up on development. Conversely, if the exposure and development is such as to bring out the dense part, the objects in the light portion of the negative will be "burned up."

This is usually present in negatives which include a foreground and a large expanse of sky. When the exposure is calculated for the foreground, the sky will be greatly overexposed. This is to be expected because of the vast amount of light present in the sky. By referring to the Wellcome exposure calculator, we find that when an exposure of $1/30$ of a second is recommended for a normal foreground, an exposure of about $1/500$ sec. would be ample for the sky at the same lens aperture. It is obvious that when exposure is made for the foreground, the sky will be grossly overexposed.

To obtain a successful print of both sky and foreground from such a negative, it is also obvious that both of these portions of the negative must receive different exposures during printing.

The negative is placed in the enlarger and focused upon the easel. It is best now to make test exposures upon small pieces of paper of both the sky and foreground portions of the negative to determine the correct exposure for both, so that they will be rendered properly in the same developing time. Let us assume that five seconds exposure is necessary for the foreground portion of the negative and 20 seconds for the sky in order to reproduce both properly in two minutes developing time.

The paper is placed in the easel, an orange printing filter slipped in front of the lens and the light turned on. A piece of cardboard is now held between the lens and paper in such a manner that it just blocks out the foreground portion. The filter is then removed and the exposure is made while the cardboard blocks the foreground for 15 seconds, after which the cardboard is removed and the entire negative allowed another 5 seconds of printing time. In this manner the sky will receive 20 seconds of exposure whereas the foreground will have been exposed

for 5 seconds, and a successful print will be produced in two minutes developing time.

In order to avoid a hard line of demarcation between the two portions of the print, it is necessary to move the cardboard slightly forward and backward with a rapid movement.

Portions of a negative which are too thin because of improper development, exposure, etc., can be shaded out in this manner and a successful print produced.

At times, especially in portraits, it will be desirable to introduce diffusion to soften the hard, sharp lines produced by the highly corrected anastigmats supplied with miniature cameras. This is simply produced by introducing between the lens and paper a piece of gauze stretched across a cardboard or wooden frame. This will produce a slight degree of diffusion so desirable in portraits and pictorial photographs. The degree of diffusion in this case is dependent on the distance of the gauze screen from the paper; the farther its distance from the paper, the greater is the diffusion.

Cloth can also be utilized as a printing screen to produce unusual effects. If a comparatively wide mesh material such as silk bolting cloth is placed in contact with the negative during printing, the result is that of a print made on a fine-mesh canvas. In order that the cloth lie flat over the paper it will be necessary to stretch it across a cardboard or wooden frame. When the framed bolting cloth is placed over the paper so that it is in direct contact with it, only a slight degree of diffusion is produced. On reversing it so that the thickness of the cardboard or paper of which the frame is made intervenes between the printing paper and the cloth, the degree of diffusion is augmented. Greater diffusion can be produced by placing bits of cardboard beneath the frame to raise it higher from the paper.

An interesting screen known as the Simplex Etching Screen can be obtained, which when placed in contact with



The miniature camera gets great results when trained on animals.

the paper during printing, produces a print which appears like an etching. The effects are very interesting when used for portrait and pictorial photographs.

These special enlarging methods will suggest to the photographer other means of obtaining unique effects, as well as procedures to follow to obtain the most from a negative.

New Paraphenylene-diamine—Glycin Formulas

In a former installment of this department it was mentioned that paraphenylene-diamine tended to produce negatives that were lacking in contrast, especially in the case of supersensitive films, and that it was desirable to add glycin to the formula, to "pep" up the developer.

The Edwal laboratories who market pure paraphenylene-diamine under the trade name of Diamine-P, and purified Glycin, supply the following formulas which they have tested with various films. Formula 1, for superspeed films is especially to be recommended for it produces a good degree of contrast with such films which under ordinary circumstances give soft results.

FORMULA 1. For super-speed films.

Diamine-P	6 grams	90 grains
Glycin	6 grams	90 grains
Sodium sulphite (anhydrous)....	37.5 grams	1¼ oz.
Water, distilled	500 cc.	1 pint

FORMULA 2. For regular panchromatic and orthochromatic films.

Diamine-P	5 grams	75 grains
Glycin	5 grams	75 grains
Sodium sulphite (anhydrous)....	37.5 grams	1¼ oz.
Water, distilled	500 cc.	1 pint

To mix: Measure out the water, warm it to 125° or 150° F. Add the sulphite first, then the Diamine-P and Glycin. Stir until completely dissolved, filter while still warm and let cool in a tightly stoppered bottle.

FORMULA 3. For special fine-grain panchromatic films.

Diamine-P	6 grams	90 grains
Sodium sulphite (anhydrous)....	37.5 grams	1¼ oz.
Ammonium carbonate	2 grams	30 grains
Water, distilled	500 cc.	1 pint

To mix: Dissolve the Diamine-P and sulphite, but not the ammonium carbonate as for formulas 1 and 2. Just before using the developer add the ammonium carbonate (which must be finely powdered) and stir until dissolved.

Developing time for the above formulas is:

60-degrees F. (16°C).....	36 minutes
65-degrees F. (18°C).....	30 minutes
70-degrees F. (21°C).....	25 minutes

The Stone Laboratory offers the following formula:

Diamol (Paraphenylene-diamine).....	90 gr.
Glycin	60 gr.
Sodium sulphite (anhydrous).....	600 gr.
Water	16 oz.

Developing Time

Supersensitive panchromatic.....	30 min. at 65° F.
Panatomic	15 min. at 65° F.
Plenachrome and Persenso.....	24 min. at 65° F.

New metal masks: Burleigh Brooks is marketing flexible metal masks to be used instead of glass negative carriers. Four slots hold the film in position over the opening in the mask.

Bakelite vs. metal tanks: It is a well known fact that bakelite is a poor conductor of heat whereas metal conducts heat very readily. This fact can be utilized in controlling temperature with the use of either bakelite or metal tanks.

When it is desired to place the tank in a tray through which cool water is running in order to keep the processing solutions at a constant temperature, a metal tank is called for. Bakelite tanks would be of little use in such a case because of the poor conductivity of the material of which they are made.

On the other hand, we may first cool our solutions and then place them in the tank. In this case a bakelite tank offers the greater advantage. If the temperature of

(Turn to Page 27)

A NEW ERA FOR THE AMATEUR DEVELOPMENT AND PROCESSING OF SMALL CAMERA FILMS



1,00 feet unit used at Davidge Film Laboratories

A new era for the amateur development and processing of small camera films is ushered in by the advent on the market of the Hollywood Roto-Tank. The unit is a small edition of the developing system which the Roy Davidge Laboratories are using for commercial work.

Roy Davidge, for some years past, has catered to the individual processing of negatives, daily prints and dupes, giving special attention and development to suit the particular tastes of cameramen and producers. This type of work presented a problem difficult to cope with on the conventional type of developing machines. Three methods of sound recording requiring five different sensitometric standards on four brands of film added complications. The rack and tank method of development was a fairly simple answer to the situation, but it had three major drawbacks: rack flashes, the inability to handle rolls larger than 400 feet and the lack of necessary agitation of the solutions used on the faster emulsions that were being developed

by the raw stock manufacturers.

With the aforementioned requirements in view, the Davidge Laboratories evolved a system of unit development which has all the flexibility of the rack and tank system with none of its drawbacks.

Each of the new developing units has a capacity of approximately 1100 feet and consist primarily of a wheel or rotar having alternating vanes to agitate or direct the developing solution to the surface of the film at opposed angles.

A celluloid separator with staggered, elongated protuberances breaks up the cross currents from the agitators and displaces the solution on the emulsion surface of the film approximately 480 times a minute with a constant change of current direction.

The tanks in which the unit operates use a floor space 1 x 4 feet each and contain approximately 47 gallons of developer, different formulae to meet individual needs can be handled by no great cost by either materials or floor space.

The principal advantages, from the producer's angle, are a better quality negative and positive due to greater color gradations through all densities from flesh tones to shadows. Better duping prints and negatives can be produced by films processed by this method, owing to a smaller grain structure being obtained by the use of weaker solutions, depending on extreme agitation to produce the required densities.

The smaller units in all essentials duplicate the results obtained with commercial equipment. The Roto-Tank can be loaded in a change bag or dark room and all other operations carried on in the light. The film capacity is 25 feet of 35 mm. or 50 feet of 16 mm., eighteen (18) fluid ounces of liquid are used in each operation.

A unit is highly adaptable to the needs of cinematographers and sound units when on location. The test strips produced in the Roto-Tank will duplicate the best results obtainable at the studio laboratory.

THE RETURN OF THE ARC

Recent developments in motion picture photography have shown a definite trend toward the return of the arc light. The quality of photography obtainable with the arc light,—which closely approximates the quality of sunlight,—has never been questioned; but other factors such as the noise from the mechanism, the hum of the generator and the cost of manpower to operate the searchlight types caused them to be displaced to a very large extent. Gradually the searchlight and spotlights of the carbon arc type have found their way back into general usage. Improvements have been made by the studios themselves which take care of the objectionable electrical and mechanical features. The additional manpower required to operate arc lights of the searchlight type is more than justified by the results obtained. This is proven by the fact that almost all of the searchlight type lamps are again in use.

This trend on the part of the studios has given the manufacturers of carbons and carbon lamps the courage to go ahead with a program of development. Recently a new type high intensity studio carbon was announced. In order to meet a demand for a silent and efficient flood-

lighting unit the Mole-Richardson Company built a general flood light, of the side arc type, around this new carbon. While the new carbon is only eight millimeters in diameter and the new floodlamp weighs a great deal less than the old type, they were able to increase the intensity of illumination from approximately sixty-five foot candles at fifteen feet with the old type lamp to a figure which exceeds two hundred foot candles with the new unit. In both cases the same wattage was used. These lamps have given excellent service on a number of Technicolor pictures and are now finding their way into black and white photography. From a standpoint of efficiency, silence and light quality, this new type lamp seems to be an ideal unit wherever general floodlighting is required.

There is no reason why this new development in carbons should not be used in the spotlight and searchlight type lamps also and considerable work is being done to provide a light and efficient spotlight and sun arc. It is quite probable that the near future will find the perfection of light weight semi-automatic lamps, of the eighty ampere rotary spot and sun arc types.

LIEUT. FELSTEAD IS SOLDIERING

Lieutenant Charles Felstead, Associate Editor of the *International Photographer*, has been assigned to active duty with the 63rd Coast Artillery (AA), at Fort McArthur. The regiment left recently on its annual man-

euvers that are taking it through the more northern part of California, where tactical and anti-aircraft defense problems are being worked out under actual field conditions.

EVERY MONDAY—

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THOUGHTS ON PHOTOGRAPHY

By KARL A. BARLEBEN, JR., F.R.P.S.

PHOTOGRAPHY as a hobby offers many unusual attractions to the amateur who is willing to go into it with both feet and realize from the start that it is far from an exact science. To many, photography is a simple matter which can be learnt in a few hours. Yet, in order to fully understand it, one must delve into optics, mechanics, art, and chemistry. It is possible, of course, to teach a person how to operate a simple camera in half an hour. At the end of that time he should know how to release the shutter, focus the lens, and set the diaphragm. In a sense this is photography, but it hardly suits the term. Photography in its broader meaning suggests far more.

Regarding the matter from another view-point, let us for a moment dwell upon the self-styled expert. For the sake of the argument he may claim to know photography from A to Z—but does he really? It has been my experience that the more a man knows about photography the less inclined he is to be sure of himself, for he has come to realize what a vast field photography actually is. The more a man knows, the more he realizes what an enormous amount there is still to learn and know and this fact makes the true “expert” doubtful as to his ability.

No one man can claim to know all about photography—nor even all about one single branch of it. One may specialize in photographic chemistry, for example, and know all about developers, fixing baths, time and temperature, gamma, and the like. Yet when it comes to making pictures, he may be a decided flop. This is only to be expected after all, for, as those who have thought about the matter agree, no one man can be proficient in everything. It is even something of an achievement to be a master of one phase of the work. I have known excellent photographers who didn't know what $f:4.5$ meant—and cared less. They closed the lens down by rule-of-thumb plus years of experience. Nevertheless, while we may laugh at them, it must be admitted that they knew how to make photographs. There is no denying that a sounder knowledge of photography in general is a decided aid to better pictures, but just how deep to go depends greatly upon the individual.

The popularity of the miniature camera today has brought forth many new theories, ideas, and formulas. These were necessary in order to secure the best results with the tiny camera. But more than that, these new ideas have crept into the fields where larger cameras, too, are used. But the point is that in the miniature camera field there exists a certain type of enthusiast who is continually thirsting for technical knowledge. He experiments, he asks, and in general one would consider him a remarkably well-informed individual. But see some of his work! Nine out of ten are lucky if they can show you one decent photograph. On the other hand, the enthusiast whom most of us scoff at in pity, who goes about snapping pictures here and there without any real basis of photographic lore—ask to see some of his results. You may often be surprised at the beautiful technique and quality they exhibit. A person of this type has a mind which is not in the least scientific or mechanical, but highly artistic. He can make pictures, in other words. The other type, the

figures, but owing to a lack of imagination and artistic experimenter, who runs towards technicalities, knows his appreciation cannot make one decent print.

Without discrediting the technician—we need them badly—it would appear to me that the uninformed “boob” who can make good pictures in spite of not knowing the difference between $f:4.5$ and gamma is the best off. At least his mind is at ease and he can secure real enjoyment from his camera. He is not being constantly thrown into an uproar every time a new fine grain formula is suggested. In short, he is playing with photography for the fun he gets out of it. The other chap gets all the worries and headaches—but maybe he likes them, or else how can you account for his going into it?

Photography has been called both an art and a science. So far as technique is concerned, it has all the earmarks of being a science—surely it is based on some very definite and familiar laws of physics. But because artistic pictures can be made with it, it spells art to others. Both factions are, therefore, right in their contention.

And speaking of art and the like in connection with photography—which is a dangerous subject to even touch upon—I should like to mention that some of the most famous photographers who specialize in pictorial and similar artistic efforts feel that an artistic temperament cannot be gotten from books. Several of my friends express themselves in a way that leaves no doubt in one's mind on listening to them. They claim that artistic appreciation and interpretation is something born in us, and not acquired.

I should mention, however, that these gentlemen are well-versed in art—painting and drawing—and possibly their ideas may be slightly biased. Needless to say, because of their artistic training, they are enabled to produce photographs which are truly examples of artistic photography. Regardless of these attitudes, there can be no denying that an understanding of art stands the photographer in good stead.

To indicate a few of the variables of photography—the reason why one cannot be smart enough to know all about it—we might mention that the photographic emulsion as we today know it is one of the most profound mysteries. Sherlock Holmes himself would be stumped on a case of this nature. We know how to make emulsions, but that is about all. Even the manufacture of emulsions is a delicate process, liable to spoil through an error of a minute or two or an ounce or two. As a result, the process is kept strictly secret by the respective manufacturers. If any reader thinks that the process of emulsion making is easy, he is referred to the book “Photographic Emulsions” by E. J. Wall—it will be an eye-opener.

What happens when light strikes the emulsion? Many guess but no one actually knows. Several theories have been brought forward, but so far none has withstood the test of time and science.

We place a film or plate in our camera. The film is labeled a certain speed. Just how accurate is this rating? It is well known that film cannot be made uniform, batch to batch. There are bound to be slight discrepancies, yet as far as we are concerned, this does not bother us. True,

the difference might be so slight as to be negligible, still it exists, and must, therefore, be reckoned with.

Your shutter—how accurate is it? When you set it for 1/100th second, does it give exactly that exposure on the film? Here again, this is a very small matter, still it should be added to the discrepancies of the film speed.

For the sake of argument let us suppose the lens is exactly $f:4.5$ when you set the diaphragm at $f:4.5$. We now attempt to calculate a proper exposure. We have numerous considerations to think of. Even in daylight the color may vary from day to day; the intensity certainly does vary and the objects photographed present all sorts of conditions which make a correct estimate well-nigh impossible. The exposure meter comes to the rescue, but even this most useful instrument must be set properly as to film speed before it is capable of giving a proper light-interpretation. So we have just a few of the many conditions confronting us each time we take the camera in hand.

Naturally enough these are of trifling importance for all practical purposes, for the latitude of the modern photographic emulsion will more than "cover up" small errors. But those workers who dig right down into the depths of photography find these things out and then the fun begins, as it were.

When it comes to development of the negative, we again contact various problems. For example, each worker has his pet formula which he swears by. Strangely enough, few photographers agree as to the choice of developer. This may be accounted for by the fact that each individual has different conditions to contend with and, likewise, has his own ideas regarding what constitutes a "good" negative. Some like a heavy or meaty negative; others prefer a thin one. Obviously no one formula can produce a negative to the liking of all. To be strictly correct, we must realize that a different formula should be used for each grade, type and make of emulsion. Yet ordinarily any and all films are developed in one formula.

The technical boys like to talk about gamma, and can show you curves and figures which make the hair of the uninitiated fairly stand on end. It is true that gamma is important, but it will vary with the worker. To be correct, we should say that gamma should be controlled and applied to each type of picture, for some subjects are at their best when developed at a low gamma, others at a high gamma.

The miniature camera has made us all "grain conscious." The old-fashioned formulas are no longer in use, for today a formula must have fine grain characteristics to be fashionable. This is well, for grain is a most decidedly annoying factor. However, in the opinion of many, we seem to have swung too far over in our efforts towards fine grain. In other words, there are now in use formulas which give a marvelously fine grain, but sacrifice richness and detail. This should not be. If we can secure fineness of grain sufficient for our purpose, why sacrifice important qualities in the negative? So reason some keen amateurs who have not been misled about fine grain.

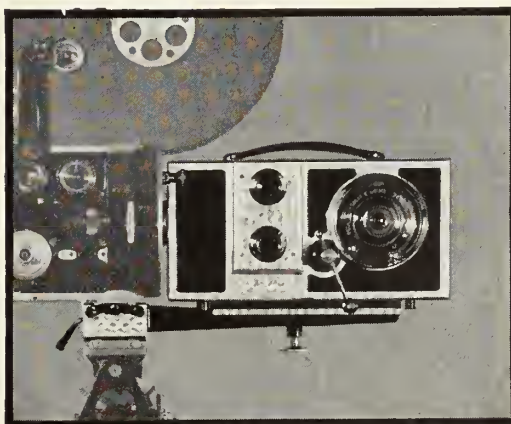
In Europe they secure fine grain results by using the various special fine grain films. In America we work a bit differently. We insist on speed in our films, hence we are forced to use comparatively grainy films and try to cover up by using fine grain formulas.

But what're the odds? Photography is a grand game regardless of whether you are working for technical data, pictorial and art results, or just casual snapshots. If you use a movie camera, miniature camera, or a box camera—aren't we all more or less brothers under the skin? The technical fans supply us with our modern emulsions and formulas, to say nothing of making it possible for us to know the focal length and speed of our lenses without the necessity of sitting down and getting all balled up in a maze of figures. The arty workers give us pictures that delight our eyes—in short, each one contributes something to the game. We all share and share alike. A grand game.

THE lens that brings great ideas to life

Special effects which baffle photographic technique—and are therefore shelved as "impractical"—are brought to life with the B & H Cooke Varo lens. Because of its almost miraculous ability to "zoom", it accomplishes subtleties and ingenious dramatic transitions not hitherto possible.

At $F 3.5$ the range is from 40 mm. to 50 mm.; at $F 4.5$ from 40 mm. to 85 mm., and at $F 5.6$ and $F 8$ the full "zoom", from 40 mm. to 120 mm., is obtainable. Adjustable stops provide for limiting the "zoom" as desired. One crank controls all moving parts. The iris is varied automatically with the focal length to keep the $f/$ value



constant. Close focusing is done with auxiliary lenses. Write for full details. Sometimes available on rental to responsible studios.

The B & H Cooke Speed Panchro Lenses

B & H Cooke $F 2$ Speed Panchro Lenses are corrected for the blue and red rather than blue and yellow rays. They give the most critical definition under the most difficult of modern lighting conditions. Made in eleven focal lengths, from 24 to 108 mm.

B & H Cooke $F 2.5$ Panchro Lenses, at considerably lower prices, meet many needs where their speed is adequate. Seven focal lengths from 32 to 162 mm. Write for details and prices.

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THE MINIATURE CAMERA—ITS ORIGIN AND DEVELOPMENT

By WILLIAM HARTMAN of Carl Zeiss, Inc.

WITH the rapidly increasing use of the miniature camera it is only natural that many enthusiasts show some interest in the evolution of that method of photography, and many are the theories advanced as to its beginning, and questions asked on its progress. When did it start. How was it developed. Is it a passing fancy or has it come to stay, and so on. Strange to relate, the consensus of opinion seems to be that miniature cameras are of comparatively recent origin, that



A NINETEENTH CENTURY CANDID CAMERA SHOT
This illustration is further evidence that the "Candid Camera" was used several years ago, by the fact that the fair lady wears a bonnet quite popular in early 1900.

it is only in the past five years or so that general interest has been aroused, and that "candid photography" came in with streamline automobiles.

While it is true that the use of the small camera has made its greatest strides in the past few years, the beginning of the idea goes back much further than most of us can remember, and the present important position of the small camera has been reached only after many years of evolution and somewhat steady progress. There is evidence that the miniature camera had aroused plenty of interest almost twenty years ago, for the well-known journal "The Miniature Camera" of February 1916 devoted a whole issue on the subject of "Success with the Pocket Camera" by Charles F. Rice. In this number we find the following paragraph:

"As evidence of the growing popularity of very small cameras, it is interesting to glance over the catalogs of the past few years, and note

CHICAGO CINEMA CLUB

The Chicago Cinema Club is sponsoring an amateur motion picture contest this coming summer.

In view of the fact that they as Chicagoans are trying all in their power to make the 1934 "A Century of Progress" International Exposition a success, they have limited this contest to films of that exposition.

The first award will be a Weston Exposure Meter donated by the Weston Electrical Instrument Corporation.

All entries must be in the hands of the Club secretary, W. W. Macomber, Room 11-117, Merchandise Mart, Chicago, Illinois, by November 15, 1934.

Entry blanks and copies of the Rules and Regulations may also be obtained from the secretary.

The length of the films has been limited to 400 feet 16 mm. or 200 feet 8 mm. and they will be judged on:

1—Exposure; 2—Composition; 3—Continuity; 4—Titles; 5—Interest.

how the manufacturers have found it expedient from year to year to discontinue the larger sizes of amateur cameras, and at the same time to supply high-class lens and shutter equipment in smaller sizes."

As to the origin of the miniature camera, it was sometime in 1900 that the Ica Aktiengesellschaft introduced the BEBE, later followed by the VICTRIX and ATOM. All of these used 4.5x6 cm. plates and film packs, and it was left to the Ernemann Camera Works to utilize motion picture film with their BOBETTE. Both Ica and Ernemann are now part of that famous camera combine known as Zeiss-Ikon.

There is nothing to indicate that the miniature camera went over with a bang, and for about a dozen years its use was restricted to the European countries. Then about 1912 we find the ATOM coming over to this country and it would seem that the small camera made an immediate appeal for during the decade following the appearance of the BEBE, other camera manufacturers produced more miniature cameras and from then on the use and popularity of this method of photography enjoyed uninterrupted and rapid progress.

And there is every reason to believe that the use of the miniature camera will continue. So much has been, and is being written on the subject that I shall mention only a few of these reasons. Compactness, which makes it more likely that we will have the camera with us when needed for an emergency shot. Economical, for there is hardly a comparison with the low cost of miniature camera film and the cost of material for the larger camera.

Ease of manipulation, for the short focal length of the miniature camera lens means great depth of field. A 50 mm. lens on a 24x36 mm. picture size is approximately equal to a 10 inch lens on a 5x7 inch picture, and while the short focus lens, say at f:2.8, has comparatively great depth, the 10 inch lens at f:2.8 would have none at all. At the same time, all the fine pictorial quality of the 10 inch lens on a 5x7 inch would be equaled by a 5x7 enlargement from the smaller film.

In high speed work the small camera is unexcelled, for the short focus lens requires much less shutter speed to stop motion than is needed with a large camera fitted with a long focus lens. Finally, the quality of enlargements leaves little to be desired, and the end is not yet in sight. I can safely say that the time will come when we shall see perfect enlargements of fifty or more diameters from miniature films.

TO FILM THE COLOSSUS

Some time ago Gaumont British Picture Corporation announced its intention of filming the life of Cecil Rhodes. The time that has elapsed since that announcement has been devoted to extensive preparation and it is now definitely stated that the film will go into production. Immediately following its decision to make the picture the company sent Geoffrey Barkas, unit production manager, to South Africa to make a detailed reconnaissance of locations and buildings and to arrange facilities for transport, materials and power.

Contacts have been established and such complete arrangements made with Government, railways, public and private bodies that the stage is already set. The film version of the script is all but complete and the difficult work of casting for the many important parts in the film is now occupying the attention of the production executives. This ambitious production will be directed by Victor Saville.

Noted for UNIFORMITY

REVOLUTIONARY new qualities made Eastman Super-Sensitive "Pan" a byword almost overnight. But only day-in and day-out delivery of those qualities over a long period could give this film lasting fame in the motion-picture world. *Uniformity*... the quality that has always characterized Eastman films... has made Eastman Super-Sensitive Panchromatic Negative the brilliant leader it is today. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-Sensitive*
Panchromatic Negative



SOUND PROOF STAGE DESIGNING

By PAUL S. HARMER

Sound stages are no longer the nightmare to the motion-picture producers that they were in the early days. Much has been learned. Some things had to be changed as improvements were made in sound recording equipment. When sound first came to the studios of Hollywood, Dr. Knudson, of the University of California, Los Angeles, fortunately was equipped to carry on experiments in his sound testing laboratory at Westwood.

He found definite figures for transmission and reflection of sound with the various types of walls which were tried. Had it not been for his co-operation right here at home the problem would have been more costly and hazardous.

Much of the early efforts in the sound proofing of stages were made by men who had worked in radio broadcasting stations; the principles involved were similar, but a suitable motion picture stage has been found to be an entirely different construction problem.

The major studios have found that a stage 80 ft. wide and 150 ft. long by 30 ft. clear under the trusses; or 110 ft. wide by 200 ft. long and 40 ft. clear under the trusses will suit almost any condition that may arise. A single unit stage is by far the most efficient. Some studios have built two and three stages adjoining each other, all under one roof. The studio saved the price of an outside wall, but they have paid for it many times since in delays and spoiled sound track, caused by noise from the adjoining stage, this noise following the floor joists or passing through the wall and doors.

Steel framework and steel trusses have always proven superior to wood trusses, especially since earthquakes must be considered when designing any new building.

Wood studs, joists, rafters, sheeting and flooring are better non-conductors of sound than steel; consequently they are preferable because of this quality. No resonance trouble is encountered from any ordinary building material, the fundamental frequencies are usually below 50 cycles; for instance, pine wood measured 7 cycles per second; iron measured 12 cycles; plastered concrete measured 28 and plastered brick measured 48 cycles. These are relative values and will vary according to mass and volume. The partial modes give rise to overtones two and three cycles higher, but these are too weak to cause any trouble.

Strange as it may seem, frequencies below 500 cycles carry through building walls and reverberate longer than the others; frequencies from 500 to 4,000 cycles are intermediate, while the frequencies above 4,000 are quickly absorbed and fade out. This is the reason that calculations on the low frequencies are so important when designing a new stage or sound proofing an old one. This also is the reason the hard wall sets have come back into use; in order to preserve the higher frequencies in more equitable proportion.

In order to make clear the intensity of sound as expressed in decibels, I will illustrate the difference between these intensities as expressed in numbers. A bel is the intensity of sound in dynes per square centimeter for a given frequency, and a decibel is one-tenth of a bel, or ten decibels equal one bel. The following is a logarithmic table. Numbers expressed in exponents.

$10^0 =$	1	then \log_{10}	1	= 0	bels =	0	decibels =	threshold of	audibility.
$10^1 =$	10	"	10	= 1	"	10	"	above	"
$10^2 =$	100	"	100	= 2	"	20	"	"	"
$10^3 =$	1,000	"	1,000	= 3	"	30	"	"	"
$10^4 =$	10,000	"	10,000	= 4	"	40	"	"	"
$10^5 =$	100,000	"	100,000	= 5	"	50	"	"	"
$10^6 =$	1,000,000	"	1,000,000	= 6	"	60	"	"	"
$10^7 =$	10,000,000	"	10,000,000	= 7	"	70	"	"	"

And so on up to 130 decibels, where sound is so intense it becomes painful. A sound of 70 decibels level is 1,000,000 times more intense than a sound of 10 decibels level.

It is practical to build a sound stage which will have a sound transmission loss of 60 decibels at 128 cycles, providing the neighborhood noise warrants such a building. Fig. 1 shows a typical wall and roof of such a structure. This is one of the first large stages built for M-G-M and is located between the Pacific Electric Railroad and Washington Boulevard. Fig. 4 shows a typical wall and roof of a recently built stage in the same studio; instead of reinforced concrete they used steel trusses and steel frame; wood studs, joists and rafters doing away with the concrete floor, this is typical of the advances made during the past six years. It is an expensive proposition to build a large stage with a 60 decibel transmission loss and a reverberation period as shown in Fig. 8. Consequently, quieter locations are sought, or the building is constructed to a less expensive specification.

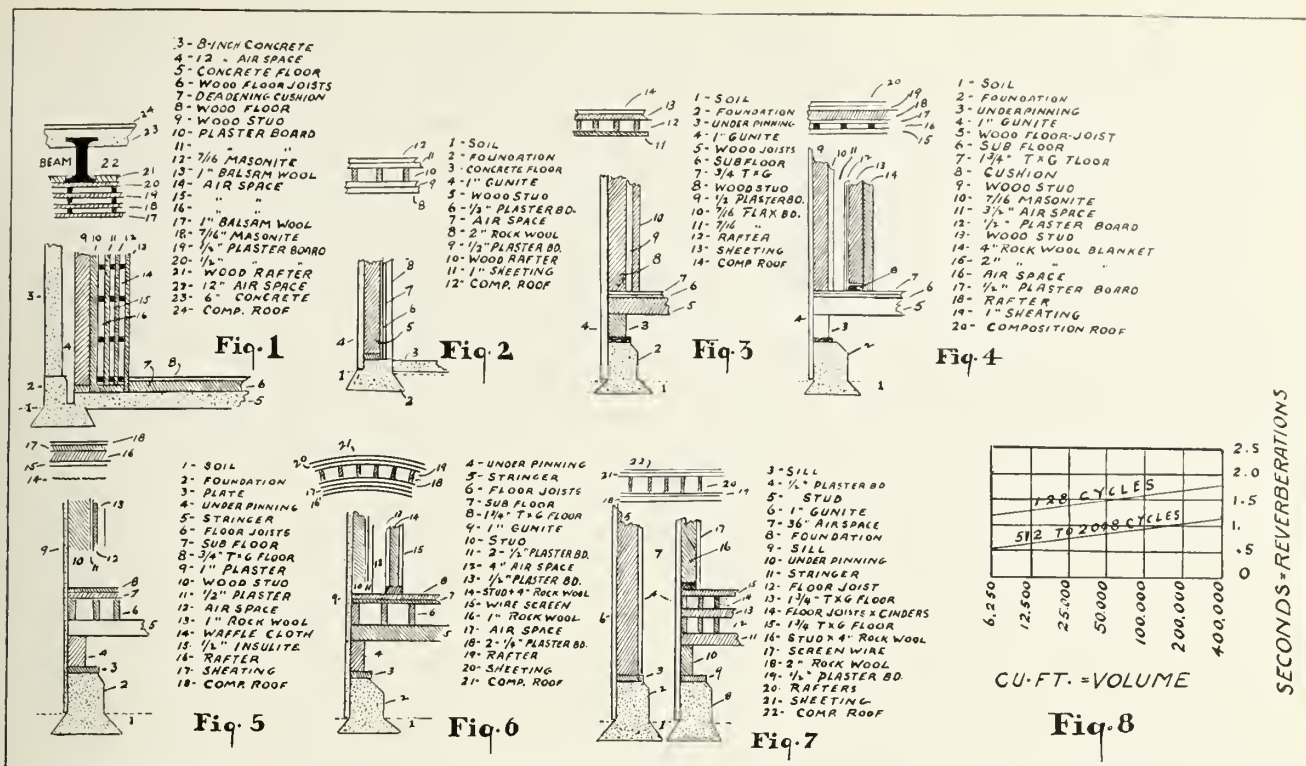
A stage with a 50 decibel transmission loss at 128 cycles can be built either with a double or single wall. The double wall type has proven to be the best.

Roofs and ceilings generally do not give any trouble, even when airplanes fly overhead at a reasonable distance; trucks, tractors, hammering and loud talking are the despair of the sound mixer. Extraneous noise which exceeds 6 decibels in the set, where a company is recording dialogue, is sure to cause a retake, and while some shots can stand more than 30 decibels interference it is not recommended.

To illustrate the sound insulation value of various walls, a 2 by 6 studded wall with metal lath and 1 inch of gunite plaster has a transmission loss of 30.6 decibels at 128 cycles; the same wall with $\frac{1}{2}$ inch plasterboard added to the inside, has a transmission loss of 34.4 decibels. The same wall, except using $\frac{7}{8}$ inch fibre board instead of plasterboard, has a transmission loss of 37.4 decibels. There is a difference in the kind of plaster. For instance, a 2 by 6 studded wall with metal lath and two coats of gypsum plaster has a transmission loss of 40 decibels at 128 cycles.

It is an easy matter to construct a sound stage with a transmission loss of 45 decibels, and a reverberation period of $1\frac{1}{2}$ seconds, at 128 cycles, but as you go into walls of greater transmission loss and shorter reverberation periods, the costs mount quickly to the benefits accomplished.

Fig. 2 is a typical wall at Universal; Fig. 3 at the small studio on Beachwood; Fig. 5 at Darmours; Fig. 6 at United Artists and Fig. 7 at RKO-Pathé. Fox Hills stages correspond to Fig. 1, while their Western Avenue stages have not been treated for sound, except by hanging large ozite blankets, 1 inch thick, about a foot



from the wall.

This type of treatment stops excessive reverberation, but does not eliminate enough external noise being transmitted through the walls and consequently interfering with production.

Concrete floors are not popular with the art department or the recording engineers. When a set is built on a concrete floor, a wooden sub-floor is usually necessary, and this generally causes a drumminess to the recorded sound. When a stairway is required in the set, it becomes necessary to build the entire structure on a high platform, in order to get sufficient height above the concrete.

Air conditioning is absolutely necessary to sound stages, not only to keep fresh air circulating, but to keep the temperature down to a reasonable figure. When the air is 80 degrees Fahrenheit 4 feet above the stage floor, I have seen it 110 degrees on high spot light platforms. Large electric lights throw off much radiant heat which does not become heat until it strikes some object; if it happens to be the actor, it is torture. The only way to overcome this is by circulating air from the level of the stage floor, in well distributed locations, and taking it out through the topmost part of the stage. A large fan or blower is built on steel stilts on the outside of the stage, with a heavily sound insulated air duct and necessary fil-

ters passing to the circulating points. Complete air conditioning plants with automatic temperature and humidity control were installed in the first sound stages, but this is another expense which has been dropped by the major studios.

Some stages fortunately are located in a sound shadow, other buildings are directly between the stage and the most troublesome sound source. At United Artists the office building forms an unbroken line between Santa Monica Boulevard and the stages. This is also true at Darmours. At RKO-Pathé there is a double line of buildings causing a sound shadow from Washington Boulevard.

This is a great help, as the diffused sound is greatly reduced in force. First National is less fortunately situated, as some of their stages face directly on Dark Canyon Boulevard.

The general complaint from the sound engineers that I know is that the stages which are good enough to keep out troublesome noise are too dead inside; while the stages that are alive enough inside do not keep out the troublesome noise. However, to strike a happy medium, there is not much chance that anyone can design a sound stage that will do everything it might be supposed to do, for any and all recording. By the use of hard and soft flats, or reflectors, ideal conditions are closely approximated.

EARL THEISEN'S HOLLYWOOD NOTE BOOK

HERE are some rootless persons who accept the world as their just due. They are those mugs who never show appreciation for courtesies extended them. It seems that I am one of them. Last month Reis & Fitzpatrick, photographers, gave me some photographs to illustrate my "In the Realms of Tricks and Illusions." It was through an oversight on my part that credit was not given them. Sorry, I'll be over in a couple of days with a cigar.

* * *

As little a thing as a bunch of grapes may present a problem in the making of a movie. Rudy Bylek drove some 1800 miles through California and Mexico trying to locate some Tokay grapes to be used in filming "Caravan." None were found, since the local variety won't

be ripe until after Thanksgiving. The eastern cold storage houses were also called upon without success. After a number of cables were sent out over the world the grapes were located below the Equator in Argentina, where they are experiencing their Fall and the Argentina grapes are already being picked. That night several tons of grapes were put aboard a fast moving cold-storage boat. Four weeks later they arrived. You will see them in the wine making sequences in "Caravan."

* * *

The Fox Newsreel is going to be changed. On Labor Day the Fox Film will have its own exclusive coverages throughout the world. Lawrence Stallings will edit and Lowell Thomas will be the commentator, according to plans. See also pages 29 and 38.

When the History of the Motion Picture Is Written the Camera Will form the Gonfalon of the Procession and the Cameraman Will Be right Alongside.

THE CAM

Vol. I.

MONTHLY NEWS OF PRODUCTION

COLUMBIA CLIPS

By BOB TOBEY

"BROADWAY BILL," directed by FRANK CAPRA. Joe Walker, the old lens and lighting maestro, on June 16, threw his clothes into a small valise, packed his special lenses into fourteen trunks and an egg crate and took off for the vicinity of Tanforan, trailing after him an admirable crew consisting of Vic Scheurich, George Kelley, Jim Goss, Jack Andersen, and Walter Lackey.

Top spots in this tale of the turf are filled by Warner Baxter, Myrna Loy, Sterling Holloway and that darkly handsome troubador, Clarence Muse. In support—and get a load of this load—Lynn Overman, Ward Bond, Charles Levison, Arthur Rankin, Ray Walburn, Margaret Hamilton, George Cooper, Charles Wilson, Forrester Harvey, Paul Harvey (Fred Harvey was busy building a new restaurant), Samuel S. Hinds, Harry Todd, Barbara Reed, Mary McGrath and Bruce Galbraith. Heigh-ho—looks as if Mr. Capra will need eyes in the back of his head to direct this crowd.

Your little keyhole-pecker is delighted to announce that this picture moves George Kelley up one notch, and a very sizeable notch, in the camera profession. He takes over a second camera for the first time, on this production, and it is a deserved promotion for a hard working young man. Emil Oster, head of Columbia's Camera Department, and who is indefatigable in the interests of his "boys," put the deal over—with the hearty co-operation of Frank Capra and Joe Walker. Best of luck, George.

Irving Lippman toted his Dark Hazard along on the trip and Marty Crail went up, too, as Knight of the Darkroom. Frank Capra is in such a hurry to see his rushes that the film is being rushed to the lab. each night by plane and the dailies are returned to the location the next afternoon in the same speedy manner. If the company stays in Tanforan too long Crail is threatening to stow away on the plane some night and come back and see his wife. And they've been married for two whole years.

"GIRL IN DANGER," directed by ROSS LEDERMAN. Ben Kline, none the rustier for his well-earned vacation, handled the peepsight on this one. Now repeat after your Uncle Bob, little kiddies: "His camera crew consisted of Mr. Browne, Mr. Dawson and Mr. Russell." (In a couple more issues this column will write itself. Untouched by human hands.) George Cooper, the Blonde Menace, took the bows as sound technician, Walter Meins was grip and Howard Robertson, regardless of what he terms himself, gaffed the picture. (Remind me to tell you a funny story about Howard some time.)

Ralph Bellamy, Shirley Grey, J. Carrol Naish and Charles Sabin lend their personalities to the epic. Bellamy also loaned (lent, leant, or what-have-you) a temporarily athletic touch to the ensemble by limping about on a bum ankle, acquired while playing tennis.

"TROPICAL MADNESS," directed by ARCHIE GOTTLE. Joe August photographed this idyll of the African Wild with lyrics and music, featuring Frankie Albertson and Lois January. I can't see how the picture can be so tropical with a January cast to it, but we will sort of skim over that and tell about how Dave Regan was operative cameraman and Marcel Grand and Jack Russell did the honors with the focus-changing devices. Glenn Rominger was dial-twister, Jimmy Punter (I can never look at that name of his without wanting to do word-puzzles with it) gaffed for August and Eddie Blaisdell was grip. The man with the frantic scissors was James Sweeney (film editor to some).

LEWIS MILESTONE has been testing for several days for his production, "THE CAPTAIN HATES THE SEA," which should be already under way by the time you read this. Arthur Edson makes his first appearance on the Columbia lot, as chief cinematographer for the Milestone production; and Al Keller, he of the beaming smile, is assisting Edson.

The cast is not definitely set as yet, but Victor McLaglen probably will play a leading role, Fred Keating, the former prestidigitician (something more skillful than a prestidigitator—magician to the youth of the land), who is now one of Columbia's White Hopes, has been tested on miles and miles of film (to the huge delight of Eastman Kodak Company) and will doubtless have a part in the picture. Emphatic I don't care so much whom they cast for the production, but if they change that perfectly marvelous swell title I'll shoot to kill.

BARNES AND POLITO HANDLE PHOTOGRAPHIC PROBLEMS OF WARNER MUSICAL "DAMES"

By BOB HUSSEY

Warner Brothers First National Studios created a furore in the entertainment world with their "42nd Street" and continued establishing new high standards with the succeeding extravaganzas, "Gold Diggers of 1933", "Footlight Parade" and "Wonder Bar."

Each seemed unsurpassable, but each excelled its predecessor. Now comes the Warner Brothers special musical "Dames", and those engaged on the mammoth production declare it is certain to establish itself as the acme of perfection in its type of screen entertainment.

"Dames" has been produced in two distinct units. Ray Enright directed the story sequences from Delmar Daves' adaptation of Robert Lord's original story. Joan Blondell, Dick Powell and Ruby Keeler head an all-star cast which further includes Hugh Herbert, ZaSu Pitts, Guy Kibbee and others.

Sid Hickox photographed the story sequences with Messrs. Larson and Anderson assisting.

Busby Berkeley unit operated individually and at one stage of the production, both units were before the cameras simultaneously.

Of the four Berkeley numbers in "Dames", two were of the intimate or novelty class and two were of the ensemble category.

Some of the Berkeley photography was handled by George Barnes, with Warren and Lynch assisting and Sol Polito photographed with Green and de Angeles as his worthy assistants.

An endless number of photographic problems were presented in the filming of the Berkeley ensembles. Berkeley has gained his fame from his ability to place the audience eye in usual positions from which is seen the rhythmic and co-ordinated movement of groups of screen beauties. In the spectacular "Dames" numbers Berkeley, with Barnes and Polito, have outdone their previous sensational efforts.

The "Eyes for You" ensemble presented a huge revolving upright wheel, without an axle, and on it was an arrangement of platforms on which the young beauties were placed. The set was erected on a huge turntable and from each side was built a series of stairways which continued, in zig-zag manner, across the turntable, through the wheel and beyond to the other side.

This one set, constructed at the studio at a cost of more than \$30,000, afforded no end of photographic problems which were successfully surmounted. Silhouettes, angles, black-and-whites, arcs, all were beautifully filmed.

The second ensemble number in "Dames", for the song of that title, was a vast, graded floor through which came a maze of half-circled shields to present an odd kaleidoscopic effect and adorned with young beauties in novel costumes appearing in fascinating array.

Trick lighting effects were used throughout the filming of "Dames" and served to greatly enhance the photographic beauty of the ensembles.

John Ellis was still-photographer with the Ray Enright unit of "Dames" and performed an admirable job with his art. Bert Longworth, doing special art photography with the Berkeley unit, won attention for his especially fine work on overhead and angle shots, delivering a fine collection of beautiful studies on the production.

RKO-PATHE

(Reliance Pictures, released thru United Artists)

"TRANS-ATLANTIC MERRY-GO-ROUND."

Producer, Edward Small; author, Leon Gordon; additional dialogue and scenes, Joseph Moncreux March; comedy dialogue, Harry W. Conn; director, Benjamin Stoloff; assistant, W. J. Reiter; musical numbers directed by Larry Ceballos; first cameraman, Teddy Tetzlaff; operative cameraman, Kenneth Green; assistants, William Whitley and Ellis Carter; stills, Clifford Maupin and Clarence Hewitt; recording engineer, Oscar Lagerstrom; film editors, Grant Wytock and H. T. Fritch; art director, John Ducaese Schulza; chief electrician, Jim Potevin; chief grip, Charles Rose; chief prop, Emmett Emerson.

Cast: Jack Benney, Nancy Carroll, Gene Raymond, Sydney Howard, Sid Silvers, Sidney Blackmer, Ralph Morgan, Shirley Grey, Patsy Kelly, Frank Parker, Jean Sargent, Robert Elliott, William Boyd, Sam Hardy, Carlyle Moore, Wallis Clark, Esther Howard.

The Dauntless Three—Hal Rosson, Ray June and Clyde De Vinna, are reported to have put over a cinematographic masterpiece in the photographing of the M-G-M opus, "Treasure Island."

PARAMOUNT

"ELMER AND ELSIE." Producer, Louis Lighton; authors, George S. Kaufman and Connelly; screenplay, Humphrey Pearson; director, Gilbert Pratt; assistant, Jay Marchand; cameraman, William Mellor; operative cameraman, William Rand; assistant, Guy Roe; stills, Herman Clark; recording engineer, A. W. Siegel; film editor, Richard Currier; art director, Arthur Hedrick.

Cast: George Bancroft, Frances Fuller, Irene Kains, George Barbier, Nella Walker, Cedes Sellen, Helena Phillips.

"LADIES SHOULD LISTEN." Producer, Douglas MacLean; original by Alfred Saviano; Guy Bolton; screenplay, Frank Butler and Clyde Bunyon; director, Frank Tuttle; assistant, Russell Mathews; first cameraman, Henry Stryker; operative cameraman, Roy Eslick; assistant, and Dugas; stills, Don English; recording engineer, Don English; film editor, Eda Warren; art director, Ernst Fegte.

Cast: Cary Grant, Frances Drake, Everett Horton, Charles E. Arnt, Nydia Esman, George Barbier, Charlie Ray.

"NOW AND FOREVER." Producer, Louis Lighton; original by Jack Kirkland and Millie Baker; screenplay, Vincent Lawrence and Iva Thalberg; director, Henry Hathaway; assistant, Clem Beauchamp; first cameraman, Harry Fishbeck; operative cameraman, Fred Mayer; assistant, Neal Becker; stills, Elwood Bredell; film editor, Ellsworth Hoagland; art directors, Hans Heier, Robert Usher and Robert O'Dell.

Cast: Gary Cooper, Carole Lombard, Riley Temple, Sir Guy Standing, Charlotte Grütze, Telser Komai, Buster Phelps.

"THE NOTORIOUS SOPHIE LANG." Producer, Bayard Veiller; author, Frederick Villard; screenplay, Anthony Veiller; director, Ralph Murphy; assistant, Neil Wheeler; first cameraman, Al Gills; operative cameraman, Lionel Linden; assistant, Francis Burgess; recording engineer, Harry Lindgren; film editor, James Smith; art director, Robert Odell.

Cast: Gertrude Michael, Paul Cavanagh, Arthur Byron, Alison Skipworth, Ben Taggart, Leon Errol.

"MRS. WIGGS OF THE CABBAGE PATCH." Producer, Douglas MacLean; author, Aliceegan Rice; screenplay, Williams Stevens McNu and Jane Storm; director, Norman Taurog; assistant, Ewing Scott; first cameraman, Charles Lang; operative cameraman, Robert Pittack; assistant, Clifford Shipper; stills, Eddie Cronenwell; recording engineer, Eugene Merritt; film editor, Hugh Bennett; art director, Robert Odell.

Cast: Pauline Lord, W. C. Fields, Zasu Pitts, Jimmie Butler, George Breakstone, Evelyn Venable, Keat Taylor.

Bert Shipman and Edward Garvin are the birds who sailed on the Empress of Britain to secure sea going shots for the new Eddi Cantor picture. They will stop at Balboa, Canada and return by plane.

Karl Struss has been assigned by Paramount to photograph "Fifty-two Weeks With Fletch."

TINY CAMERA SHOWS SPEED—A teletype telegram from Leipzig says: The latest development in photography is a high speed camera capable of working by artificial light, which is carried in the vest pocket.

Heretofore the cameras capable of catching rapid motion have been unwieldy affairs and bring sunlight was required.

The new high speed camera is about the size of a cigar lighter and will take sharply fine pictures in one-thousandth of a second, or faster.

The unique vest pocket cameras, which were exhibited at the Leipzig Fair, can be operated by ordinary electric light indoors.

MARY PICKFORD SPEAKS—Feelers by Mary Pickford, for a possible cast that she obtained for a picture she has in mind, convince her that there is a notable vacuum in the film industry. The scarcity of talented actresses impresses Miss Pickford that there is more activity in Hollywood now than it has known for a long time.

The many independent producers at work are regarded as a healthy sign by Miss Pickford. She interprets it as the reflection of the "new era" into pictures. This is interesting because long ago, it was bewailed that the majors in the business pretty well sewed up.

CRAGRAM

"The Camera Must Always Come First. That Is the Creed of the Motion Picture Photographer. No Matter What Happens It Must Keep on Turning."

FROM THE CAMERAMAN'S ANGLE

No. 7

M-G-M STUDIOS

"CARRETT'S OF WIMPLE STREET." Director, Sidney Franklin; from the play by Rudolph; screenplay by Claudine West and Ernest; first cameraman, William Daniels.

"NORMA SHEARER, FREDRIC MARCH, CHARLES TON, MAUREN O'SULLIVAN, FERDINAND MURKATHERINE ALEXANDER, MARION CLAYTON, IAN

"THE MERRY WIDOW." Director, Ernest; original by Franz Lehar; dance director,; first cameraman, Oliver Marsh. Maurice Chevalier, Jeanette MacDonald, Gombell, Edward Everett Horton, Una, Barbara Leonard, Sterling Holloway, Barbara, Joan Gale, Shelia Manora, Leonas, Edna Walde, Barbara Barondess, Shir-oss, etc.

"CRED AND PROFANE LOVE." Director,; original by Edgar Selwyn; play by John Lee Mahin; first cameraman, e. Folsey.

"JOAN CRAWFORD, CLARK GABLE, OTTO KRUTTUART ERWIN, UNA O'CONNOR, MARJORIE GATEKIM TAMAROFF, PAUL PORCASI.

"THE STUDENT TOUR." Director, Charles; original screenplay by Arthur Bloch; adaptation, Philip Dunne; cameraman, Joseph Valentine.

"CHARLES BUTTERWORTH, JIMMY DURANTE, REGAN, MAXINE DOYLE, FLORRINE MCKINNEY, BLUE, DEWEY ROBINSON, DOW FOWLEY, MARY

"L. GOOD AMERICANS." Director, Edlarin; original play, S. J. and Laura Perel; screenplay, Wells Root; first cameraman, Krasner.

"OTTO KRUGER, TED HEALY, LOUISE HENRY, d Brophy, Bert Roach, James Donlan.

"H. HIDE-OUT." Director, W. S. Van; screenplay, Albert Hackett and Frances; first cameraman, Ray June.

"ROBERT MONTGOMERY, MURIEL EVANS, ED, Mickey Rooney, Louise Henry.

ver have I seen so many of the smaller busy," says Miss Pickford. "They're maktures everywhere and using big names in It means that the day of mass-production screen is over."

ording to Mary Pickford there never was a time for the young player to get his This makes a lively market for new talent. says that there is a marked scarcity of young leading men, who know how to act eak lines.

lling an ambition he has had for years, Freulich, "still" cameraman at Universal, recently completed a two-reel drama en-"Prisoner."

picture has but two characters, George vell known stage and screen actor, in the role, and Jack Rockwell, veteran character, the supporting role.

ough the drama has no dialogue, beautiful and appropriate sound effects form an ining background. Under the able direction eulich, who also wrote and produced the it was filmed by Cinematographer King in the heart of the desert near Victorville. picture is booked for an early showing at marte Theater, on Vine Street, Hollywood.

SOL LESSER (Pathe)

"CK'S BAD BOY." Director, Eddie Cline; George W. Peck; screenplay, Bernard Schu-nd Marguerite Roberts; first cameraman, Good.

"Jackie Cooper, Jackie Searl, Thomas n, Dorothy Peterson, O. P. Heggie.

Fernstrom has returned from his tour of l, France, Switzerland and Ireland where been Technicolor-ing for Fitzpatrick Travel-We understand that in a couple of weeks orts out again for the same company.

"LLION DOLLAR RANSOM." Associate r, Eph Asher; director, Murray Roth; y Damon Runyon; screenplay, William Lipst-cameraman, George Robinson.

"Edward Arnold, Marjorie Gatenon, Wini Robert Gleckler, Bradley Page, Edgar Norghie White, Phillips Holmes, Mary Carlisle.

ERIK CHARELL, DIRECTOR OF FOX "CARAVAN" CLAIMS SOMETHING NEW IN CAMERA TECHNIQUE

Erik Charell, noted Continental producer of musical spectacles now making his first American offering for Fox Film, "Caravan", believes that the day of the "close-up" is about over, and is filming his production accordingly.

"Everybody knows that the motion picture camera is supposed to take the place of the spectator's eye and see what he sees," Charell explains. "Yet in many pictures you will look at a scene of two or three people, taken from a distance of perhaps 20 feet, and then the camera jumps into a position two feet away from one player, then back to the first position, then in front of the other player, and so on. It becomes a series of disconcerting jumps instead of a smoothly-told story.

"If it is absolutely necessary to show a close-up of a player to emphasize a dramatic expression, then the camera should move in slowly, just as if the spectator should walk up to that player and look him in the eye. It should never leap about like a kangaroo.

"In 'Caravan' I am using as few 'cuts' as possible, and am trying to tell my story just as a spectator on the actual scene would see it. I believe that this makes the resulting picture much more realistic and plausible than if I made the audience dizzy by rapidly alternating the viewpoint."

Hollywood film experts have been considerably interested in Charell's application of this belief, and in his extensive use of "dolly" and "crane" shots to get his effects. On only two or three occasions has the director employed more than one camera at a time, even on the most elaborate scenes, but this camera usually follows an intricate path, carefully rehearsed and timed, through the set, and it has frequently taxed the ingenuity of the Fox Film technicians to arrange tracks and equipment so the instrument can be moved as he wants it.

As a result, many of the individual scenes in the picture run as much as 300 to 400 feet in length, with the camera now making a long shot of a huge crowd of gypsies, hussars or Hungarian villagers; now bending to concentrate on a leading player or a significant movement, now wandering among a group of dancers, perhaps singling out one or two for a close shot, then following or preceding a certain character from the set.

Most American directors who made such a scene would break it up with at least a dozen "cuts" to close-ups or shots from another angle, but Charell intends to use these scenes in one continuous flow, just as they were made on the set. The favored few Fox Film officials who have been privileged to see a rough assembly of "Caravan" to date are prophesying that the picture will be sensational from a photographic standpoint, as well as in its introduction of a new film star, Charles Boyer, the French screen idol, who has the starring role.

WARNER BROS.-FIRST NATIONAL

"A LOST LADY." Supervisor, James Seymour; author, Willa Cather; screenplay by Gene Markey and Kathryn Scola; director, Alfred E. Green; assistant, Frank Shaw; first cameraman, Sid Hickox; operative cameraman, Wesley Anderson; assistant, Vernon Larsen; stills, John Ellis; recording engineer, Oliver Garretson; film editor, Owen Marks; art director, Jack Okey; chief electrician, Paul Burnett; chief grip, L. P. Maxmeyer; chief prop, Pat Patterson.

Cast: Barbara Stanwyck, Ricardo Cortez, Frank Morgan, Rafaelo Ottiano, Charles Starrett, Philip Reed, Henry Kolker, Willie Fung.

"FLIRTATION WALK." Supervisor, Robert Lord; authors, Delmar Daves and Lou Edelman; screenplay, Delmar Daves; director, Frank Borzage; assistant, William Cannon; first cameraman, Sol Polito; operative cameraman, Al Green; stills, Mac Julian; recording engineer, C. A. Riggs; film editor, William Holms; assistant, William Phelan; art director, Jack Okey; chief electrician, Frank Flanagan; chief grip, Harold Noyes; chief prop, Orin Haglin.

Cast: Dick Powell, Ruby Keeler, Pat O'Brien, John Eldredge, Ross Alexander, Guinn Williams, Henry O'Neill, Glenn Boles, John Arledge.

"A LADY SURRENDERS." Author and screenplay, Mary McColl, Jr.; director, Archie Mayo; assistant, William McGann; first cameraman, Ernest Haller; operative cameraman, Al Roberts; assistant, Stuart Higgs; stills, Cliff King; recording engineer, E. A. Brown; film editor, Tommy Pratt; art director, Charles Hughes; chief electrician, Claude Hutchinson; chief grip, Harry Barnhouse; chief prop, Pinky Weiss.

Cast: Jean Muir, George Brent, Veree Teasdale, Arthur Aylesworth, Joan Wheeler, Pauline True, Charles Starrett.

FOX

"SERVANTS' ENTRANCE." Producer, Winfield Sheehan; author, Sigrid Boo; screenplay, Samson Raphaelson; director, Frank Lloyd; assistant, Booth McCracken; first cameraman, Hal Mohr; stills, Ray Nolan; recording engineer, J. E. Aiken; film editor, Margaret Clancy; art director, William Darling.

Cast: Janet Gavnor, Lew Ayres, Ned Sparks, Walter Connolly, Louise Dresser, Siegfried Rumann, G. P. Huntley, Jr., Katherine Doucet.

"JUDGE PRIEST." Producer, Sol M. Wurtzel; author, Irvin S. Cobb; screenplay, Dudley Nicholls and Lomar Trotti; director, John Ford; assistant, Edw. O'Fearn; first cameraman, George Schneiderman; stills, William Thomas; film editor, Paul Weatherwax; art director, William Darling.

Cast: Will Rogers, Brenda Fowler, Rochelle Hodson, Roger Imhof, Tom Brown, Anita Louise, Stepin Fetchet.

"WANTED." Producer Sol M. Wurtzel; screenplay, Lester Cole and Stuart Anthony; director, Louis King; assistant, Sid Bowen; first cameraman, L. W. O'Connell; stills, Frank Powolny; recording engineer, S. C. Chapman; film editor, Al de Gaetano; art director, Duncan Cramer.

Cast: Rosemary Ames, Russell Harding, Pert Kelton, Victor Jory, George Irving.

"SCRATCHES AND DIRT..." My Shovel Boys tell me that Friend Baker is working out a new process printer for the insert department. . . . Fred Dawson was on the sick list for a while this month—but he's back in harness again, so don't send flowers. . . . Rod Tolmie showed up on the lot for a few days; I guess he's finished that serial he was working on. . . . Bill Bradford also hove in sight from far-off Pasadena to work on some inserts. Bill lives so far away he must feel like a Pilgrim every time he comes to work. . . . F. M. Browne disappoints me; he took his Leica to the races at Indianapolis and took only ten pictures. Ennahoo he says he had a grand time at the Chicago Fair. He practically took me through it in a burst of verbal enthusiasm. . . . Johnny Stumar vows he'll require a parachute as part of his equipment hereafter whenever he shoots from an insert car. Johnny took off from the top of a camera car as it rounded a curve, and made a three-point landing on the handiest group of boulders. Guess we show you the spot where small bits of Stumar cling to the underbrush. Charlie is now up and around and able to take a little nourishment out of a bottle, if you haven't a glass handy. . . . Emil Oster has been busy putting the final touches on the new motorized dollies that Columbia just purchased. Incidentally, I am informed by one of my Shovel Boys that the Camera Department will give out a story next month that will wow 'em—a surprise for the whole industry. Hold your breath. . . . Andre Barlatier, T.O.B.S. (The Old Background Snatcher) took a little jaunt to Mazatlan, Old Mexico, recently with Roy Davidson, the gentleman in charge of Columbia's Special Effects Department, to photograph backgrounds for the Milestone Production, "The Captain Hates the Sea." (I love to roll that title on my tongue. Maybe it has a special significance for me. I was born twenty miles from Cape Cod and some of my ancestors were sea captains. Tish tash, there I go again.) Anniway, Andre went to Mazatlan, taking Don Murphy as his grip and Enzo Martinelli as his assistant. Enzo says that the sunsets were marvelous, but the cucharachas were bigger and more glorious. They were so big they were terrifying. They used to dash at the company car as it progressed along the road. Enzo claims that if he had stayed another week he'd have had one of the biggest cockroaches trained to carry the camera. Sure, Enzo, but it takes a chameleon to change focus. . . . At the Ambassador Beauty Pageant this month the bathing beauties were so brown I had to use a G filter on 'em to keep 'em from going higher. . . . And if you've never seen Billie Seward in the fish, drop up s'm'tahm and I'll tell you why she won the contest. . . . If I can get out of this straight jacket I'll be seeing you next month.—By Bob Tobey.

MAJESTIC

"SHE HAD TO CHOOSE." Director, Ralph Ceder; story by Mann Page and Izola Foster; screenplay, Houston Branch; first cameraman, James Brown, Jr.

Cast: Isobel Jewell, Buster Crabbe, Regis Toomey, Sally Blane, Huntley Gordon, Wallis Clark, Matt McHugh, Fuzzy Knight, Mabel Turner, Kenneth Howell, Jules Cowles, Arthur Stone.

NEW KLIEGLIGHT OF REVOLUTIONARY DESIGN PROVES SUCCESSFUL AND HIGHLY EFFICIENT

By HERBERT A. KLIEGL*

*Development Engineer and Vice President of Kliegl Bros. Universal Electric Stage Lighting Co., Inc., New York.

KLIEGLIGHTS have always played an important role in the development of motion pictures. The original "Klieglights" were the first successful artificial lighting units which made possible the taking of motion pictures, in studios, without dependence on sunlight. They were arc lamps, introduced many years ago. Later, with the advent of sound pictures, noiseless incandescent units were evolved. Always in step with the advance of the industry, the Company has steadily developed improved units as new requirements have arisen.

The present demand for still greater lighting efficiency and more flexible units is answered by the presentation of this entirely new Klieglight, which is a radical departure from anything heretofore produced, and of such a decided improvement, it has been prophesized that it will completely change present methods of studio lighting.

It offers the highest efficiency ever achieved in lighting units of its kind—being several times more efficient than arc or conventional incandescent units of the same wattage. This distinctively new type of theatre and studio lighting unit, is the result of revolutionary discoveries made while experimenting with different types of reflectors preliminary to the construction of lighting units to meet the extreme conditions and exacting requirements for lighting the Radio City Theatres, New York, in 1932. Then followed more than two years of intensive research and development work which brought forth this new Klieglight, decidedly different from its progenitors, based on entirely new principles, now perfected in every detail—and said to be one of the most remarkably advanced units for lighting that has been produced within the past ten years.

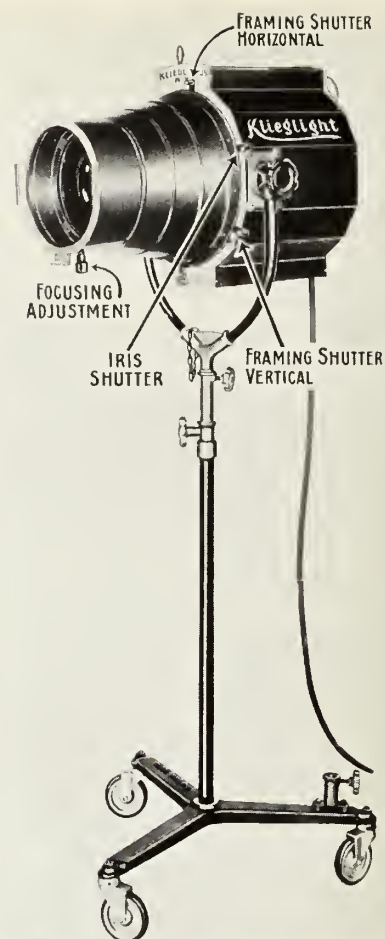
Its Lighting Efficiency

Its working range is any distance up to 250 ft. The light is absolutely uniform throughout the illuminated area—and its intensity may be varied by a simple adjustment of the lenses—without affecting its uniformity of distribution, and without the necessity of using dimmers.

The shape of the light beam can be instantly adjusted to any desired pattern—round, square, triangular, rectangular, semi-circular, etc. of innumerable dimensions—from a pin point to full lens opening—by an arrangement of iris and framing shutters with which it is provided. It thus affords a range, variety, and simplicity of controls that have never been so practically provided heretofore.

At a demonstration witnessed by Motion Picture Engineers at their recent convention at Atlantic City, its remarkable efficiency was shown by comparative tests performed at the meeting. The test was made with the present standard Kliegl 8-inch studio spotlight, and the new Klieglight, side by side, both units using 2000-watt biplane filament lamps; for both floodlight and spotlighting, with a 20 ft. spread and a 5 ft. spot projecting the light a distance of 55 ft. Measurements of the lighted area were taken with a Weston Footcandle meter, by Mr. Meli of the Westinghouse Company, who is the inventor of the Biplane filament.

Average readings indicated that the standard spotlight



projected a flood of 11 ft. candles and a spot of 24 ft. candles, whereas the Klieglight projected 32 ft. candles and 70 ft. candles under the same conditions—proving conclusively the new unit to be considerably more efficient in light output than the formerly accepted standard unit—truly a remarkable improvement, offering great economic advantages, as well as the greater flexibility and more perfectly controlled lighting arrangements it affords.

Interesting Details

In design, the reflector employs the ellipsoidal principle of light reflection—which assures a maximum pick up of light. It is a G. R. C. rhodium metal reflector, resulting from experimentation and a new discovery in metallurgy. It is formed by an electro chemical process, using certain proportions of gold, rhodium, and copper, to produce a durable, permanent reflector with an exceptionally high reflection factor—and a surface that will not chip, peel, or tarnish under any condition of heat or weather.

In their manufacture, absolute accuracy of light control was also obtained, to a far greater extent than is possible by any spinning or casting process—also a first-surface everlastingly brilliant finish that assures continuously high efficiency over a long period of time. The surface of the reflector has a reflection factor of approximately 74% and it will withstand the excessive heat generated by concentrated filament lamps.

During the period of development, certain difficulties were experienced in adapting high candle power lamps to the reflector principally because the large filaments apparently were not sufficiently concentrated to permit precise control of the light rays—but it was found that by facing the broad side of the filament toward the sides of the reflector rather than toward the lens—we obtained a pick up of approximately 90% of the total output of the filament—and that all the light emitted could be directed by the reflector into the lens system. Approximately 40% more light was obtained with the filament facing

the sides of the reflector, than by facing the lens.

Also, the original lamps were such that they had to be burned with the base down, and necessitated an additional hole in the top of the reflector in order to get the lamp in and out of the socket. This was objectionable and was overcome by a decided change in the lamp itself. After experimenting, the General Electric Company developed the bipost base-up-burning biplane filament lamps for use with Klieglights—and they are now available in T24 bulb, 1000- and 1500-watt sizes, and T-30 bulb, 2000-watt size. (200 Hour or 25 Hour life—the latter being recommended for color photography). The filament center of all three lamps is the same.

In these new lamps the filament is placed far down in the tip of the bulb, which procures a two-fold advantage. (1) minimize the amount of glass inside of the reflecting system; (2) all the blackening of the bulb takes place near the top of its neck which is outside of the reflector. This arrangement permits the maintenance of the initial efficiency for a long period of time.

The lamp holder is removable, and specially devised to securely retain the lamp in a fixed prefocused position, at an angle of 45°—rotary adjustments being provided for properly setting the lamp filament in respect to the lens, to procure a maximum output and even distribution of light.

The lamps are designed to operate anywhere within a 45 degree tilt either side of the vertical, and by mounting it offset at a 45 degree tilt from the vertical in the lamp housing, it permits a full 90 degrees down tilt of the Klieglight unit, so essential for motion picture use.

The lamp housing is thoroughly air cooled by an improved direct-draft system of ventilation—with vent openings top and bottom, which allow a full and continuous passage of air through the hood—thus prolongs the life of the lamp, and insures cool, economical operation. This louver ventilation system prevents light leakage without interference with the air circulation.

The lens system is another new idea which was incorporated in this model. A double lens arrangement on a movable carrier in the cylindrical front housing, permits both beam adjustment and beam intensity variations.

By varying the position of the two lenses in respect to each other both the intensity and the spread of the beam can be varied—without the use of a dimmer. The operation is independent of the framing shutters—which may be changed or remain set, as desired, while the lenses are varied. By using lenses of different focal lengths—different degrees of maximum beam-spreads can be obtained. The units are furnished equipped with lenses to suit individual requirements, of the correct focal length to give the maximum spread specified, with maximum lighting efficiency.

Both square and round (iris) adjustable shutters are a part of this unit. They are located between the lamp and the pick up lens in a focal position directly related to the lens system and its beam control.

The iris shutter regulates the circular diameter of the light beam, and a projecting handle controls its operation, opens or closes the shutter from black out to a pin point, and to full sized beam.

The framing shutters are for shaping square, rectangular, and other angular formations of the light beam, any size desired—and consist of two vertical and two horizontal freely-moving independently adjustable blades with protruding handles, permitting any desired arrangement.

Slide grooves are provided on front of housing, to receive media frames for color lighting effects; or a special spread lens can be placed in the slide grooves to procure a wider horizontal or vertical spread of light, if necessary—these are now available in practically any degree spread desired, and may be had either with a circular spread or

rectilinear spread in a horizontal or vertical direction.

The Klieglight is perfectly balanced and adjustably mounted on swivel bearings, in a yoke, and swings easily in any direction and sets on a telescopic pedestal stand fitted with ball-bearing rubber-tired casters, permitting it to roll easily over the floor. It is also provided with an auxiliary support so that the projector can be set on the base close to the floor when required. A 25-ampere snap switch, mounted in the hinged back casing of the lamp housing controls the main line.

General Advantages

It accomplishes results in a simple, direct manner, provides uniform high intensity illumination, and considerably lowers lighting cost. It gives over three times the light for the same wattage input than any conventional type of unit produced up to the present time, and utilizes practically the entire light output of the lamp under all operating conditions—that is the efficiency or total output remains the same whether the light beam is spread or concentrated.

Beam control is one of its most interesting and valuable features—that make the unit especially well suited for studio lighting. By means of the adjustable lens system, in conjunction with the adjustable shutters, both the size of the field illuminated and the intensity can be varied in several ways. For example, by simply changing the shutter opening and leaving the lenses set, the area illuminated can be altered while maintaining the same degree of intensity as before; or by moving the lens the spread can be increased or decreased, and by adjusting both the lens system and the shutters, the lighting can be intensified or diminished without increasing or decreasing the size area illuminated—or vice versa—including a number of intermediate adjustments between the two extremes. Thus is provided means for obtaining practically any size or intensity of spot or flood within the wide operating range of the unit—without the necessity of using a dimmer, and as it has no spill light it also eliminates the use of gobo-lights shields, framing cardboards and the like.

The light can be projected through doorways, without lighting the sills and adjacent walls; or sun shadows can be cast on the walls in any direction required. A great amount of light can be directed on any particular section or article of a set without spill over. Thus besides providing for general illumination, it also provides complete self-contained forming control—quick acting and certain.

These new Klieglights are adaptable to a great variety of applications—and can be used for either spot or flood-lighting, indoors or outdoors, for long or short range work. In addition to the many applications in motion picture studios, already mentioned, they are also well adapted for color lighting of studio sets—now in experimental stages, and here, too, the expense of larger size color mediums is avoided.

In the theatre they are ideal for use as proscenium lights; balcony front lights; ceiling floods for illuminating the front of stage and orchestra pit and for general spot-lights on the stage. They may also be used for indoor or outdoor floodlighting of buildings, fountains, arenas, church lighting of altars, etc cetera. Hotels have used them both as spot and floods, particularly for the lighting of runways for fashion shows. In fact, they may be used wherever a sharp cut off light, of high intensity, without any spill is required.

The distinctive advantages of these new Klieglights have been quickly recognized, and their use promptly effected in many commercial projects as well as theatres and motion picture studios.

Mr. Powell, supervising engineer of the General Electric Company stated he considered the new Klieglight to be one of the greatest outstanding developments in the lighting units of the last few years.



NEGATIVE OR REVERSAL FILM FOR THE AMATEUR?

By WALTER BLUEMEL

16 mm.

IN view of the fact that all professional motion pictures are made by the negative-positive system, it seems rather strange at first that in amateur 16mm. photography the entirely different methods of reversal film should be used. But there are many reasons for this departure. First and foremost is the matter of cost. In the reversal process the negative exposed in the camera is reversed into a positive, thus doing away with the expense of an additional film and of printing and processing it. With improved processing machines now used for reversal film, the developing and reversing is practically one operation, and that fully automatic, while in the negative-positive system there must necessarily be three distinct processes—developing of the negative; printing of the negative on positive stock; and developing of the positive. All this raises the cost of the negative-positive system for the amateur, though in professional pictures this additional cost is negligible, especially in view of the fact that any number of prints can be made from a negative, while in reversal film there is only one print.

Another important drawback in the negative-positive system for the amateur, but one which is rapidly being overcome, is that it gives more grainy results than reversal film. This does not mean that the reversal film has inherently finer grains of silver bromide. The difference is due to the processing, in which the silver bromide which has been exposed to light is changed to little grains of silver. Reversal film, when developed as a negative, under the same conditions as the negative film would be developed, is just as grainy as is negative film. All modern emulsions are originally of sufficiently fine grain to be entirely satisfactory, but in the developers used until recently the grains tend to clump together and produce larger, objectionable grains. In reversal processing, however, these coarse grains, which have been exposed by the cinematographer, are bleached out and the finer and slower speed grains in the emulsion remaining are exposed to light in the reversal laboratory and developed into a positive. Finer grain, without sacrifice of speed (as faster emulsions have larger grain), is thus obtained.

The combination of these two advantages has been sufficient to establish the popularity of the reversal film over the negative.

Recently, however, with the development of paraphenylene-diamine base developers, very fine grain results have been obtained in negative which compare most favorably with reversal film. Further improvement along this line is imminent. Negative film is gaining in popularity and may soon offer considerable competition to reversal film, if not actually surpass it.

At present the more universal use of negative film is curbed by the lack of fine grain processing laboratories and the resulting higher charge for developing and printing. I know of only one 16mm. laboratory in the country which uses the paraphenylene diamine developer, regularly and has done sufficient research along the line of fine grain developing to obtain consistent results. That is the Dunning Process Company of Hollywood.

To quote Mr. Carroll Dunning: "The problem in straight negative developing (not reversal) is to prevent clumping of grains and until recently all known developers seemed to have this fault.

"For years our work has been the production of photographic effects for the major motion pictures studios of Hollywood and in almost every instance we were compelled to utilize double and triple exposures employing both original and duplicate negatives. It is obvious, therefore, that we should be keenly alive to any method that would reduce grain.

"Dr. Sease, of Dupont, was the first to impress upon us the possibility of Paraphenylene Diamine as a base from which to carry on our research work. But aside from the fact that as a chemical it is much more expensive, it seemed to indicate a requirement of greater negative exposure. Limitations of this sort are vital.

"There were two other factors against it, one the possibility of poisoning if handled without rubber gloves, as well as bad staining of the hands, and, secondly, the excessively long developing time.

"But some six months of testing in our research department has brought us a formula along with other chemicals that make us consider the time well spent. For want of a better name we call it Dunning Grainless.

"It produces a pseudo-physical developing, colloidal in character, in which the old bugbear of clumping seems to have disappeared.

"We have not been able, of course, to eliminate the danger element in handling the baths except that our operators all wear rubber gloves. We still require about three times as long to develop. Unfortunately it is a characteristic of all developers that a shortening of the developing time increases grain clumping, so if we are to take advantage of the superior qualities of this new developer we must spend the time to get the best results.

"Grainless developing as now practiced in the Dunning Hollywood Laboratories does not compel the amateur to use any more exposure than he has been using with reversal film."

Judging from my own personal experience, however, I would suggest a slight increase in exposure (perhaps one stop, where possible) to obtain the best result. On negative over-exposure is always more desirable than under-exposure, as it can usually be corrected in printing, whereas on reversal film slight underexposure is permissible.

Paraphenylene diamine developers produce thin negatives, even when properly exposed, but these give very excellent prints, with finer tone gradation than do reversal films. The prints are, generally speaking, not as contrasty, but are nevertheless sufficiently snappy and very pleasing if properly exposed, processed, and printed. I do not believe, however, that one has quite as great a latitude of exposure as with reversal film. There is more detail in the shadows than on reversal film, and the tone gradations are more like those perceived by the eye, that is, there is not as much contrast between them. It must be remembered, of course, that the best results can be obtained only with correct exposure.

Negative film has another advantage over reversal film, and that is in its use with filters. It is impossible to obtain certain filter effects, such as night effects in daytime, with reversal film because of the automatic character of the processing machines for this film. These machines, after the original development has been completed and the silver grains bleached out, attempt, by means of a photo-electric cell, or "electric eye," to automatically correct the exposure of the reversed "print" so that it is always uniform. Scenes which have been over-exposed are printed darker and underexposed scenes lighter. Night filter effects are,

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MOTION PICTURE SOUND RECORDING

Chapter X

(The preceding chapter served to introduce the discussion of the main amplifying equipment used in a sound recording studio. This chapter continues that subject by describing the actual amplifying equipment and the usual manner of its arrangement in the amplifier room.)

The Amplifier Room



HIS large room, as has been explained, is located near the center of the sound studio, and the connections to practically all of the equipment comprising the several recording channels of the studio are brought here to a common connecting point, known as a main distributing frame (or MDF). This arrangement makes it convenient for the engineer in charge of the recording room to locate trouble in any channel quickly and to make such semi-permanent changes in the line up of the channels as may be necessary.

Running across the middle of the amplifier room are the bays supporting the main amplifiers and their associated speech equipment. A bay is a metal framework made of I-beams about six feet high and wide enough to hold panels nineteen-inches wide. These frameworks are placed in a row, seven bays being required for each two recording channels, and bolted to the floor. The connecting lines between the amplifiers and the MDF run down inside the I-beams to a metal gutter sunk in the cement floor of the room.

Opposite the amplifier bays are the panels of the battery switchboards. These panels extend across the room for about the same distance as the amplifier bays of two recording channels, but they are not quite as high. It is sufficient to say here that these panels are equipped with a rather large number of knife switches and meters, the arrangement being such that any set of batteries (storage

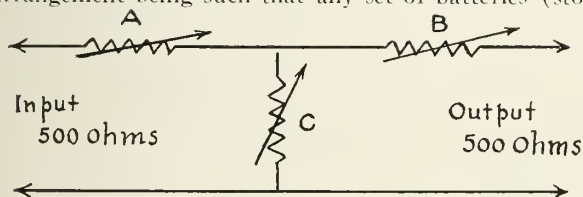


Figure 1. T-type Attenuator

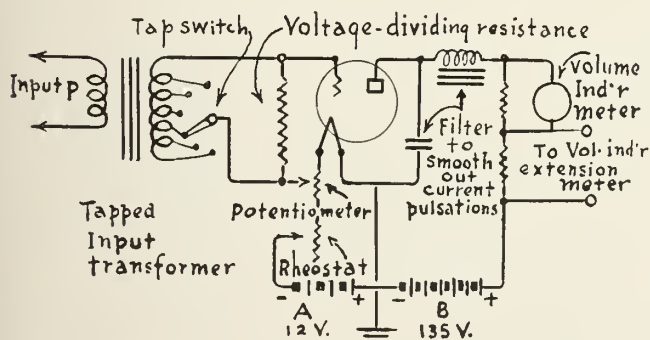


Figure 2. The Volume Indicator

batteries of several sizes being used for both filament and plate supply for the tubes in the amplifiers) may be connected to the generators for charging or used to supply current for any or all of the recording channels by closing the proper combination of switches. Rheostats in the fields of the charging generators and the ammeters provide the



By CHARLES FELSTEAD,
Associate Editor

engineer with means for regulating and checking the rate at which the batteries are charged. All battery circuits are fused at the switches.

The Main Recording Amplifiers

We will consider now only the three bays that compose the main amplifier system for a single recording channel; for there is normally no difference between the amplifiers of different channels. The center one of the seven bays that make up a two-channel amplifier installation carries only the jack field that was mentioned in the preceding chapter. These jacks will be described more fully later.

The right-hand one of the three bays carries the actual recording amplifiers; the center bay supports the volume indicator panel, a smaller jack field that provides input and output connections for the speech equipment in that channel, and auxiliary equipment; while the left-hand bay holds only the monitoring amplifiers that supply the two large horns in the monitor room and smaller horns in the recording and amplifier rooms. All panels are of iron, painted black like the supporting frameworks, and fastened in place by machine screws. Spaces on the frames where there is no equipment are filled by blank panels. The back of each piece of equipment on the frames is covered by a metal can cover that serves as both an electrical shield and a dust cover.

At the bottom of each bay are terminal blocks, like those on the MDF, to which are connected the lines for all the equipment on that bay. Mounted beside these terminal blocks is a row of "grasshopper" fuses, one fuse for each battery circuit in the bay. These fuses are constructed and arranged so that when one burns out it raises a little flag to permit it to be found easily, turns on an alarm bell, and lights a bulls-eye signal light on the top of the bay in which it is located. By replacing the fuse these alarms are all automatically reset.

There are five recording amplifiers in the standard recording channel, all of them mounted in the right-hand bay. The main amplifier has an input impedance of 200 ohms to match the impedance of the transmission line from the monitor room. This is a three-stage affair, the first tube being of the voltage amplifier type and the other tubes being of the power amplifier type, although low grid and plate voltages on the middle tube keep it from operating as a true power amplifier. The three tubes are coupled by means of impedance coupling, but transformer coupling is used at the input and output of the amplifier. A volume control having twenty-two steps, each step being two decibels higher than the preceding one, is provided on the panel.

The grid-bias, or *C*, batteries for this main recording amplifier, and for all other amplifiers in the channel that do not obtain their grid-bias voltages from their filament or plate batteries, are mounted in a small wooden box on the panel where they are handy for checking or replacement. These *C* batteries are flat batteries of the flash light type and make contact with springs in the bottom of the wooden box.

Rheostats are provided for regulating the filament current of the tubes in this, as well as in all the other, ampli-

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THE IMMORTAL PAL

(Continued from Page 3)

him "on the lot." One morning he stopped me. It was his birthday and he took from his pocket a button with the number 66 on it and pinned it on my lapel. I told him I was going to keep it until he was 99 and turn it upside-down. He thought that a good joke for he always boasted he would live to be a hundred.

He was an inveterate chewer of tobacco—as he said, he couldn't think properly without a chew (he was a good running mate for my dad). But he was always too busy to bother about buying it and had to resort to much "mooching" from Jim, the laboratory janitor. One day Jim became so bold as to complain.

"You know, Mr. Edison," he said, "I don't get much pay for this job of mine, and tobacco costs money."

Shortly afterward, Jim received an envelope in which was a twenty dollar gold piece and a simple note that ran something like this:

Dear Jim:

This ought to buy us enough tobacco for a while.

One day, during the time he was working on his Diamond machine, he called our department and asked them to send over the long-haired fellow who played the "bull fiddle." He wanted me to listen to a couple of records and compare them and gave me to understand that I must not be afraid to say what I thought.

He put a record on his disk machine and sat close to it with his megaphone up against the sound box. He watched my face closely as I listened. It was very fine—a record made by one of the celebrated cellists, beautiful quality, smooth and free from surface noise. Mr. Edison

knew of my interest in the 'cello and of my knowledge of the difficulty in recording the instrument by the old mechanical system. He questioned me about all those points, surface noise, volume and quality and was pleased at my enthusiasm.

He then turned on a competitor's machine—another 'cello record. I immediately recognized it and became worried. It involved the reputation of another of my idols, an eminent virtuoso. Mr. Edison noticed my uneasiness and demanded that I "speak up!"

I told him it was not a good comparison.

"Why?" he asked.

"Because you happened to pick a poor record."

"How do you know?"

I explained that the artist who had made the record had expressed great dissatisfaction over it.

"H-m-m!" he grunted, as he looked around for a place to expectorate.

He gave me a funny look which I couldn't determine to be a rebuke for my impudence or an approval of my sincerity.

"Very well," he continued, "you seem to know so much about it, find me a better one."

I did, and we both agreed that the Diamond Disk was a beautiful piece of work—and it really was.

He was very positive about abandoning anything that didn't show prospects of success. He once said: "There are some things that j-u-s-t w-o-n't w-o-r-k, and the sooner you give 'em up, the sooner you can start on something else."

And nothing short of perfection satisfied him. When we showed him the final tests on the Kinetophone he was not satisfied, but generously said:

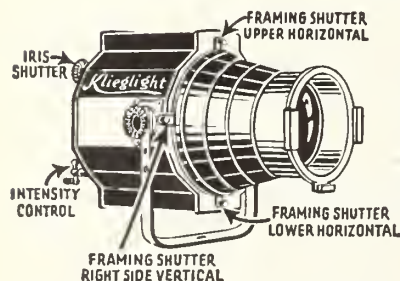
"Well . . . I believe you boys have got it as good as

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can be done . . . until something new comes along to help you."

Those were prophetic words, for since then, a great deal has "come along"—the photo-electric cell, electrical recording, electrical amplification, synchronous motors, the glow-tube and what not.

And through it all, sleeps Thomas Alva Edison who started it all . . . The GRAND "old man," the genial pal of all who worked with him . . . not as he slept on that slab of zinc sheeting as I saw him, but among the immortals, like him

*Who wraps the drapery of his couch
About him and lies down . . . with the
Patriarchs of the infant world,
With king, the powerful of the earth,
The wise, the good.*

MINIATURE CAMERA PHOTOGRAPHY

(Continued from Page 11)

the room in which the tank is placed is warm, the temperature of the solution will be very little affected. When a metal tank is employed, the temperature of the solution contained in it will rise very rapidly when the tank is placed in a warm atmosphere.

I have both a metal Reelo tank and a bakelite Correx tank, and on one occasion I found use for both. The paraphenylene-diamine developer I was using had been freshly prepared with warm water and the roll of film had been loaded in the bakelite Correx tank. It was a warm day and no refrigerator was at hand with which to cool the solution. I poured it into the Reelo tank and placed the latter in a pan; put both under a tap allowing the cool water to flow into the pan. The developer in the metal tank cooled in a surprisingly rapid time. It was then poured into the Correx tank. I have subsequently used this procedure on a few more occasions.

Local paper development: At the beginning of this article I explained the use of shading as a means of producing successful prints from negatives portions of which are relatively dense. On some occasions negatives will be encountered in which there are small dense portions which are so situated in the negative as to render shading impractical. Such dense portions can be brought out in the print by local development.

The paper is exposed and then placed in the developer until the print is normally developed—the portion of the print corresponding to the dense part of the negative will not exhibit sufficient detail. The print is rinsed, the excess moisture blotted off and we are ready to apply local development to the portion in question.

The developer should be applied with a camel's hair brush or a tuft of cotton. It would expedite matters if glycerine or syrup is added to the developer to render it more viscous, thereby reducing its tendency to spread, to a minimum. With a sufficient amount of such materials added we can be assured that the developer will stay where it is placed.

When the portion to which local development has been applied has been sufficiently brought up, the print is again rinsed and placed in the hypo for fixing.

Leitz Illumination Control: Many miniature camera photographers prefer the use of chloride (contact) papers because of the greater amount of illumination they allow in the darkroom, the larger number of degrees of contrast in which they are obtainable, and also the fact that they are less expensive.

With the 50 or 75-watt lamps supplied with most enlargers, their use is out of question because of the insufficient amount of light present to give a proper exposure in a reasonable time. Many photographers have inserted photoflood lamps in their enlargers. Such lamps are best used with a rheostat both to prolong the life of the lamp, and to keep the illumination of the lamp down when focusing, to prevent the lamphouse from becoming overheated. The Photoflood lamp generates a comparatively large amount of light.

E. Leitz offer their Illumination Control for this purpose. This device can be used only on a 110-120 volt current, either A.C. or D.C. (alternating or direct current). Seven luminosities are possible and it can be either placed on a table or fastened to the wall.

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NEGATIVE OR REVERSAL FILM FOR THE AMATEUR

(Continued from Page 24)

therefore, more or less neutralized, and the scenes which were purposely under-exposed and overcorrected by means of a filter, such as the F-29, are usually printed as daylight scenes. In the negative-positive system, however, where the printing light is controllable according to the density desired, excellent night filter effects can be obtained.

With negative, also, it is possible to expose for any portion of the picture, whether it be light or dark, while in reversal processing the photoelectric cell exposes for over-all density, and if there is a great deal of light in the picture, such as sky or snow, darker objects will be considerably underexposed. When using reversal film it is necessary to keep in mind that excessive contrasts are exaggerated on the film, and should, therefore, be avoided. For best results, the object which it is desired to have correctly exposed should have about the same illumination as the majority of the rest of the scene. With negative this is not so important because the desired object, if reasonably correctly exposed, can be given correct exposure in printing, regardless of the light intensity of its surroundings.

Inherent characteristics, such as speed and color rendition, of negative and reversal film (assuming, of course, that both films are of the same general type, i.e., panchromatic or super-panchromatic), aside from the differences brought about in the processing, are not sufficiently different to concern the amateur. However, the two films which manufacture the majority of 16mm. negative in this country—Dupont and Agfa—are undoubtedly able to supply data with which their negative film characteristics can be compared to those of reversal film.

Where only one print is needed, as is usually the case with the amateur, reversal film is the cheapest and surest to use, but the amateur should not overlook the fact that it is his only record, and once it is damaged in screening it cannot be replaced. It is readily possible, of course, to make duplicate prints of reversal film by first making a negative from the original, but this process is so much more expensive and somewhat less satisfactory than using negative from the start that the amateur would be wise to make all valuable pictures directly on negative. The additional original expense will repay itself in the long run.

Pictures of the children as they grow up should, by all means, be made on negative. In later years they will be invaluable, and, if destroyed, cannot be replaced. Reversal film, after a certain amount of use, becomes dirty, brittle, and so badly scratched that it is practically impossible to make a satisfactory dupe from it. Negative film, however, may be stored away in humidors to keep it pliable and used to make good, cheap prints for many years after the original print has worn out. It is worth the slightly added expense, now that fine quality and fine grain is commercially obtainable in negative film, to have good movies of the children after they have grown up. The same applies to pictures of important events or of scenes taken in distant lands which cannot readily be revisited, for frequently their value increases with their age.

It is unfortunate that reversal film and prints made from negative cannot be used together, for then it would be possible to intercut between the two in the same reel, so that the very valuable scenes could be made on negative and the less valuable ones on reversal, if two cameras are available. This is not possible, partly because the difference in the quality of the two films might be objectionable, but chiefly because reversal film must be projected with the emulsion toward the lens (since it is the same film which was exposed in the camera with the emulsion side toward the lens), while in projecting positive

prints the emulsion must be away from the lens. The thickness of the celluloid base is sufficient to throw one out of focus when the lens is focused for the other.

To save the expense of making titles on reversal film the amateur may use positive film by making the titles with black letters on a white background and developing the positive as such (not reversing it), thus giving white letters on a black background, which can be projected with the emulsion toward the lens, as is the reversal film. The original cost of positive film is greatly less than that of reversal film, and the developing cost in a commercial laboratory is very reasonable (about one cent per foot), keeping the total cost far below that for reversal film. If developed at home—and this can be easily done in short lengths—the total cost of the titles is practically that of the raw positive. Positive film for titles has the added advantage of being more contrasty than reversal or negative film, thus producing clearer titles, especially when developed in positive developer. It must be remembered, of course, that positive film is much slower than that sold for regular camera use, and the exposure must be increased accordingly. A little experimenting will soon tell the amateur what exposure to use.

Where the lighting conditions are particularly favorable out of doors on a bright sunny day, positive film can also be used to photograph many scenes, but it usually requires a wide open lens ($f:3.5$), cannot be used with filters of any kind, and gives an orthochromatic rendering with somewhat contrasty results. It does, however, by virtue of its slow speed (the greater the speed of an emulsion the larger the grains of silver bromide), give very fine grain results. It can also be reversed to save the expense of having a print made, but that must be done at home, as commercial laboratories usually use solutions and methods which are not suitable for positive film reversing.

To the advanced amateur who is able to do his own developing and printing the negative-positive system offers great possibilities. He will find the raw negative considerably cheaper than reversal film, and with his own developing and printing the cost should still be less. He need, of course, print only the good scenes of the negative, thus further cutting down expenses. The amateur who does not do his own laboratory work may, in the long run, find negative cheaper for the same reason—if he knows he will have a lot of bad or unnecessary scenes he can readily cut them out of the negative before having it printed.

With his own laboratory the ingenious amateur can produce many special effects through special printing possible only with the negative-positive system. This does not necessarily require expensive or elaborate printing equipment, for a printer which will prove quite satisfactory and will do many things most 16mm. printers on the market today cannot do, can be built fairly cheaply and easily. In my own case I have built a printer with which I can obtain many effects obtained in 35mm. printing, such as fades, dissolves, wipe-offs, and double exposures. The entire printer was made with five and ten cent store tools, using such odds and ends as anyone might have lying around or be able to get easily, the central unit being an old Q. R. S. DeVry camera. I have also built my own processing racks and tanks at little expense. The mechanically inclined amateur should have little trouble in building his own laboratory equipment, especially with the help of the literature available on the subject.

Even with crude laboratory equipment it is possible to get some excellent and professional looking results. In handling negative film great care must be taken that it is not scratched or soiled, as this naturally shows up in the print. In the commercial laboratories the film is thoroughly cleaned before printing so that all dust and dirt is removed, but scratches are permanent. Negative film base

is softer than reversal, and is therefore more easily scratched. The amateur who does his own laboratory work must especially guard against scratches, dirt, and dust, not only in printing but also in processing and drying.

Most 16mm. printers can readily be made to serve much the same purpose as an optical printer in a professional laboratory, and its possibilities are worth the expense. Making fades, dissolves, double exposures and trick effects in the printer has its advantage over making them in the camera (if the camera is at all equipped for the purpose) because it is always possible to get them in the right place. If the first attempt is not successful only the cheap positive is spoiled, and the effect can be tried over until just right. When done in the camera, however, expensive film is ruined if the effect is not successful, and one does not know immediately whether or not it is. Should it be unsuccessful it is usually impossible to take it over, and the effect is lost. It is, also, frequently difficult to get a fade or dissolve to come at exactly the right place and a scene may be too long or too short between fades, or some important action is cut out, or unnecessary action included. It is for this reason, as well as that when the camera is interlocked with the sound recording mechanism its shutter must not be closed and locked, that in professional sound pictures all dissolves and special effects are made in the laboratory on an optical printer, which re-photographs the developed film and produces the transitions or special effects with a standard camera dissolve

mechanism or special attachments.

In being able to make mechanical transitions between scenes as desired, the amateur can overcome one of the greatest disadvantages of reversal film—that of being unable to indicate time lapse without the use of titles, unless, of course, a Cine-Kodak Special is available. A study of professional pictures will reveal the importance and frequency of the use of fades and dissolves. Dissolves and double exposures are also very valuable in montage editing, by means of which it is possible to suggest with details what it is impossible to show as whole, and in creating rhythm and tempo, the dissolve tending to slow up and smooth out the picture. It is also less of a shock to the eye than direct cutting, and is, therefore, more pleasing. I need not go more fully into the value of dissolves and other mechanical transitions in films—they are perfectly obvious to any movie-maker.

With the increased use of 16mm. negative and the resulting research to improve its quality it is logical to predict that the cost will be lowered and negative film will gradually replace reversal film. This is especially true for 16mm. sound on film, for if the sound is not recorded directly on the film on which the picture is taken—and most sound is desirably dubbed in later—a negative must be used. There can be no doubt that negative film, with all due respect to the present advantages of reversal film, has many advantages which in time will make its use as universal as that of reversal film today.

In the interests of screen realism the next thing in added movie equipment will be movies that have to do with smell. Lou Brock, at RKO, is developing the idea and when it is introduced the fans will be able to see an expanse of ocean and at the same time smell the salt air. The same will apply to flower gardens, tropical settings and boudoirs. The various odors in the form of chemicals which dissolve almost immediately upon contact with air, are placed in the air conditioning systems of the theaters. The sensitive control of modern air conditioning enables the operator to completely synchronize the odors with the film. It is planned to use this in "Down to Their Last Yacht."

Charlie Ray is coming back. He is coming back with holes in his shoes, a philosophy, and a big smile. He will no longer be the barefoot boy that once he was in the old Ince pictures, but a character for Paramount in "Ladies Should Listen." Let's not forget the stars who gave the screen so much a few years ago. Paramount has given a number of them a new break in the sound films. These old stars, who are still so young in years, don't want sympathy; but instead a chance to go before the camera. That is their life and they would be satisfied with just a small part. They deserve that much.

We should like to have you meet Florence Lawrence, Florence Turner, Paul W. Panzer and some others, who were on the screen a few years ago. You'd like them.



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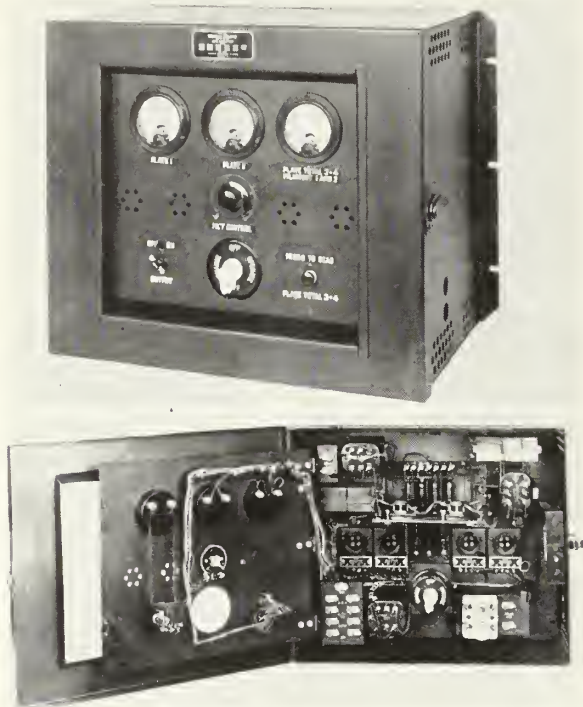
(Continued from Page 25)

fiers. Jacks on the amplifier panel permit the plugs on the cords connecting with the ammeters of the meter panel to be plugged into any filament or plate circuit, the one set of meters thus serving to read the filament or plate current drawn by any individual tube in the several amplifiers.

The Bridging Bus

The output of this main amplifier feeds into a branching circuit called the *bridging bus*. Four of the six branches of this circuit connect to amplifiers known as *bridging amplifiers*, the fifth branch feeds the volume in-

An amplifier of the rack type that is used for sound reproduction—not for recording. Courtesy Bell Telephone Laboratories.



Inside view of the amplifier illustrating the manner of wiring. The same construction is used in recording amplifiers. Courtesy Bell Telephone Laboratories.

dicator panel, and the sixth branch supplies energy to the monitoring amplifiers and through them to the monitoring horns. It is customary to maintain this bridging bus at zero level in decibels, or reference level, by balancing the amount of gain (in the amplifiers) and loss (in the monitoring controls, or attenuators) in the circuit between the microphones and the bridging bus. The volume indicator meter aids in keeping this level at the bridging bus more or less constant.

The Bridging Amplifiers

The bridging amplifiers each have only a single stage of amplification with transformer coupling at the input and output, but the circuit is of the push-pull type with two tubes. These are power tubes operating at a plate potential of 350 volts. The input impedance of a bridging amplifier is quite high; so it is truly "bridged" across the circuit. As a result, the disconnection of any of the bridging amplifiers have no effect on the impedance match existing between the remaining amplifiers and the bus.

Where large power output is required of an amplifier, two tubes are usually used in the last stage. They are connected either in parallel (the two grids being connected together and the two plates connected together) or in push-pull. In the push-pull form of connection, the secondary of the input transformer is tapped. Each end of the secondary winding is connected to a tube grid and the center tap of the winding is connected through the grid-

bias battery to the paralleled tube filaments. The primary winding of the output transformer is likewise tapped at the center, the tap connecting to the positive terminal of the plate supply and each end of the primary winding connecting to the plate of a tube.

The push-pull arrangement is more satisfactory than the parallel connection of power tubes, because when operated in push-pull the tubes function alternately, each tube operating on its own half of the alternating speech current cycle. This results in a decided reduction in the harmonic distortion always present in the output of an audio amplifier, and the output power is nearly double the power that would be obtained with a single tube.

The output circuit of each of the bridging amplifiers connects to one of the recording machines. In the normal installation, there are two wax recording machines and two film recording machines, with a bridging amplifier for each machine. These four recording machines are installed in a recording room located quite close to the amplifier room. Four pairs of shielded leads connect the bridging amplifiers with the recording machines. A variable attenuator is introduced in each line between the output of the bridging amplifiers and the recording device. Although these attenuators are installed in the recording room and are really a part of the recording equipment, it would be well to examine their use at this time.

The Recording Machine Attenuators

The attenuators are of the T-type, which means that they have three "arms", or resistance elements, arranged in the shape of a T, as shown in Figure 1. There are two series arms, *A* and *B*, and a shunt arm *C*. A three-bladed switch is arranged so that it varies the amount of resistance in the three arms simultaneously where it is turned. To increase the amount of attenuation, or loss, presented to an alternating current passing through this attenuator, the resistance of the shunt arm, *C*, is reduced and the resistances of the series arms, *A* and *B*, are increased. To decrease the amount of attenuation presented by the attenuator, the resistance of the shunt arm is increased and the resistances of the series arms are decreased. The three-bladed switch accomplishes this in steps of one decibel each when it is rotated. The input and output impedance of the attenuator remain constant at 500 ohms regardless of its setting.

The recording room attenuators have a range of zero loss to twenty decibels loss. The bridging bus is operated at a level of zero decibels and the bridging amplifiers have a gain of ten decibels, so the output of each bridging amplifier is normally at a level of plus ten decibels. (Decibels represent electrical power: reference level, or zero decibels, is 0.006 watt. Minus ten decibels is one-tenth that power, or 0.0006 watt; and plus ten decibels is ten times zero decibels, or 0.06 watt. Decibels are logarithmic quantities, so they may be added or subtracted. For that reason, plus twenty decibels is 100 times—not twenty times—zero decibels, or 0.6 watt.)

If the attenuator switch were set at mid-scale, which would cause a loss of ten decibels, the ten decibel gain in the bridging amplifier would be just balanced and the output of the attenuator would be at the same level as the bridging bus, or zero decibels. Since he can move the attenuator switch in either direction from this position, the recording machine operator is provided with a wide range of control over the level of the speech current applied to the recording device.

By turning the attenuator switch toward the zero loss position the speech current at the recording device may be built up to a level as high as plus ten decibels or by turning the switch toward the 20 decibels loss position the level of the speech current may be reduced to as low as minus ten decibels. A change in the setting of the attenuator is made whenever necessary just before recording commences.

The volume indicator, which likewise is connected across the bridging bus, is simply a modified vacuum-tube voltmeter that is equipped with a tapped input transformer. A simplified circuit is given in Figure 2. The tap switch for the transformer and a key switch that controls a voltage-dividing resistance in the grid circuit of the tube are calibrated to read directly in decibels of gain or loss relative to zero level (0.006 watt) when the pointer of the volume indicator meter is at mid-scale. Because of its calibration in decibels, the volume indicator may be used to measure the electrical level at different points in the recording circuit when not used by the monitor man as a volume indicator.

The operation of the volume indicator is due to the fact that a speech voltage applied to the primary (*P*) of the input transformer causes another and greater voltage to be induced in the secondary of the transformer. A portion of this secondary voltage, the exact amount being determined by the positions of the tap and key switches, is applied to the grid-filament circuit of the vacuum tube, which is of the voltage amplifier type.

In chapter IX it was explained that a three-electrode vacuum tube operates on the principle that the amount of plate current drawn by the tube is controlled (within limits set by the filament and plate voltages and the constructional features of the tube) by the value and polarity of the voltage applied between the grid and filament. The higher the negative potential of the grid with respect to the filament the lower will be the plate current drawn by the tube. If the grid is made positive, the flow of plate current will increase with an increase in the positive potential of the grid.

With no a-c. speech voltage applied to the primary of the input transformer the grid-bias voltage, which is obtained from the filament battery, is adjusted by means of the potentiometer, *P*, to a value that causes the meter needle to point to a red mark at about one-tenth full scale. This adjustment must always be made before using the volume indicator if accurate readings are desired.

If an a-c. voltage of fixed amplitude is then applied to the primary of the input transformer, the plate current of the volume indicator tube will be increased by a definite amount that will be dictated by the amplitude of the voltage. Any variation in the a-c. voltage will cause either a further increase or a decrease in the reading of the meter. As long as an a-c. voltage of appreciable amplitude is applied to the volume indicator, the pointer will show a reading above the red index mark, due to the portion of the grid-voltage plate-current characteristic curve on

which the tube is operated.

When a speech voltage, such as generated by a microphone during recording, is supplied to the bridging bus, the volume indicator meter pointer deflects, or "kicks", in a degree that is determined by the amplitude of the speech sounds that are causing the generation of the voltage. Since the sounds are continually varying in intensity, the meter registers a continually changing reading.

The monitor man watches the meter during recording and varies his mixing controls so that the kicking of the pointer does not pass approximately mid-scale during normal recording. Values higher than that will cause overloading of the system and the introduction of distortion in the sound record. Very loud sounds like explosions may be permitted to exceed this value, however, because distortion would not be apparent in them.

The next chapter will consider the monitoring amplifiers and the system of direct and photo-electric cell monitoring.

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STUDIO RENTALS

TELEVISION—CBS OPERATIONS ENGINEER PRAISES PERFORMANCE OF DON LEE TELEVISION STATIONS

"The television pictures on W6XS and W6XAO today were excellent. Congratulations on the fine detail."

Such was the signed statement given the Don Lee Television stations by Henry Grossman, eastern divisions operations engineer for the Columbia Broadcasting System, New York, after witnessing a portion of the Para-



Harry R. Lubcke at the controls of Don Lee television receiver installed in plane of Western Air Express.

mount feature, "Tillie and Gus," transmitted over the local television units. Mr. Grossman recently visited Southern California.

Grossman's statement carries more than usual weight, according to Harry R. Lubcke, Don Lee television director, in that he was intimately associated with W2XAB, the television station of the Columbia Broadcasting System in New York and has carefully followed eastern television developments.

Grossman expressed himself as surprised at the magnitude and scope of the Don Lee television activities and the part taken by interested "lookers" in aiding the advancement of the art.

Lubcke has advised that the public of California is invited to share in the work. The enthusiast who builds his equipment and watches the pictures sent out nightly, can assist the work being done by sending in reports on how the signal is received, night by night; how the image appears, and what irregularities are noted, if any.

It is not necessary to have a television receiver to participate in this work. The sound signals of W6XS can be received on 2800 kilocycles (107 meters), on any all-wave receiver or short wave adapter, and those of W6XAO on any ultra-high-frequency receiver of the type used by radio amateurs. Voice announcements, concerning the picture being broadcast are made approximately on the hour and half hour. Also, at the close of each schedule, a constant intensity tone is sent out to allow a definite check on the transmissions. The signal sent out when a picture is being transmitted changes in intensity as the scene changes from a close-up to a long shot and from dark to light. It is very interesting to view the image and listen to the sound of the signal at the same time. The sound varies in timbre as well as in intensity from a harsh and guttural to a clean and sharp tone, depending upon the intensity pattern of the particular scene. After a little practice, it is not difficult to determine when the scene

changes or when a character or object moves in a fixed scene; all have their characteristic variation.

However, any change in the constant intensity tone shows a change in the radio wave conditions between the transmitter and the receiver. Listeners' reports as to how this tone changes in intensity from minute to minute, from day to day, and from month to month are very helpful to the Don Lee engineers.

Lookers' reports on the appearance of the image, whether clear or blurred, and if fading is noted, as well as with regard to changes in those effects from day to day are invaluable. Standard report forms for recording these data are available upon request to the television department of the Don Lee Broadcasting System, although any systematically recorded observations are of value.

Of particular importance are reports submitted which give the "before and after" effects of a change made at the transmitting stations. Impending changes are announced well in advance over both W6XS and W6XAO at the opening and close of each schedule and are made with the request that listeners and lookers report the results secured both before and after the change.

Diagrams and complete instructions for constructing television receiving equipment appeared in the March and April 1934 issues of the International Photographer.

WEST COAST BEGINNINGS OF N. R.

Here is the beginning of what might be termed "News-reeling on the West Coast."

This valuable still is a shot of Harry Gant, the pioneer cameraman and producer, with his outfit on a journey into the high Sierras where he is going to make a news-reel picture for Thomas A. Edison, his subject being how the Forest Rangers fight fire in the National Forest Reserve.

This was in 1912 and Mr. Gant was accompanied on the trip by Forest Ranger Paul Redington, now chief of the United States Forest Service.

The shooting was done in Madera county, California, with an Edison camera. In those days the cameraman had



to get 'em when he shot 'em, for there were no retakes. Every inch of film had to go to New York and it is believed that this expedition was the first of its kind in the history of motion pictures. Paul Redington shot this still.

PRIZMATIC PRODUCTIONS

Prizmatic Productions, Inc., announce the opening of studios and offices, June 28, 1934, in the Cinecolor Building, 201 North Occident Boulevard, Hollywood. Mr. Don Graves, vice president, is in charge of sales. The company consists of a number of the old-timers in the color field and they are amply equipped to handle Color Photography for the Cinema.

INTRODUCING GEORGE E. BROWNE

New President of the International Association of Theatrical Stage Employees and Motion Picture Machine Operators of the United States and Canada.



AT the recent convention of the I. A. T. S. E. & M. P. M. O. of the United States and Canada, George E. Browne, for many years business representative of Stage Hands Local No. 2, Chicago, was unanimously elected President of the I. A. T. S. E. and M. P. M. O. to succeed William Elliott.

Mr. Browne was formerly First Vice-President of the I. A. T. S. E. and M. P. M. O. during the administration of Former President Canavan. He resigned from that office at the I. A. T. S. E. and M. P. M. O. Convention, which met in Los Angeles several years ago, in order to give all his time to the affairs of his own Local.

Too much cannot be said in praise of the new President. He is a thorough Union man and is a master of the principles of Unionism. He particularly understands the problems of the great organization of which he has

the honor to be the head and those who know him will say that he not only understands the problems, but that he has the courage, ability and vision to solve them.

He is firm. He is absolutely trustworthy. He is loyal to the body over which he presides and he demands loyalty in return. President Browne, though a man of decision and firm in his judgments, is nevertheless a diplomat and his reputation for fair dealing has done much to bring him the great popularity he enjoys.

Moreover, the new executive is a man of action and of ideas and he does not wait for anybody to take the initiative. In brief, he goes and he gets. The latch-string at 659 and at the **International Photographer**, President Browne, will always be hanging out if ever you come to our fair city. And—we hope you'll be a long time President.

PATTERNS OF ILLUMINATION

By F. MORRIS STEADMAN

IN my forthcoming book, illumination is classified into: Spherical, Hemispheric and Fractional. (This last, as with suns, flames, openings, etc., when part of the hemispheric field before each illuminated surface molecule is total darkness.) The three types are subdivided into about thirty sub-types or patterns.

In the December installment of this series I promised to describe a pattern of illumination in which the intensity varies inversely to the distance and not to the square of the distance.

This type is the long, narrow light source, the law applying for distances close to the source.

The noted scientist, Sylvanus P. Thompson, in his speech of acceptance of the presidency of the first Illuminating Engineering Society, in London, unjustly ridiculed two men because they were making an effort to discover the law of intensity variation for the long luminous tube. This tube is a certain type of light source and functions by its specific law, Thompson and the Point Source theory notwithstanding. To arrive at this law:

If we wrap a pure white paper around such a luminous tube, each of its contacting surface molecules will receive an energy influx from the tube in a full hemisphere of directions and the white paper will be made as intense as the tube itself. Here both the length and width of the tube occupy 180° relative to each point on the paper. If we now lay a carpenter's square over the tube, the latter will occupy but 90° (by its width) relative to that point of distance where the two sides of the square come together. The length of the tube, being so great, remains practically at its former angle of 180° and the tube therefore now occupies one-half of the hemispheric field before the points of a small section of the paper placed at that distance. The paper here is therefore half as bright as the tube.

Now if angles are cut in pieces of card-board with 45° , $22\frac{1}{2}^\circ$ and $11\frac{1}{4}^\circ$ degrees and these be laid over the width of the tube, the distances will be located where the tube will function at $\frac{1}{4}$, $\frac{1}{8}$ and $\frac{1}{16}$ hemispheric, the alteration in the angle subtended by the length of the tube at these short distances, being negligible.

At each increase of distance, only one of the tube's dimensions, its width, varies. Therefore, at each step the tube becomes one-half as large in the hemispheric space field, instead of one-fourth as for a more symmetrically formed light source. And since it is this change in solid angle that alters the intensity, we have the intensity varying also inversely to the distances, and not to the squares of the distances.

No matter what type of illuminant is considered and no matter whether the distance is zero or greater, the basic law is:

Intensity varies directly with the solid angle of the light pencil which illuminates independent molecules.

There is no constancy or variation of light intensity, either in natural, artificial or optical illumination, which does not rest squarely on the above fundamental law.

This law has been used and partially understood, since photography was discovered, in marking lens stops: In lenses of one inch and eight feet focal length, the F/8 stop has diameters of $\frac{1}{8}$ of an inch and one foot, respectively. The exposures under otherwise like circumstances, would be the same.

Again: We are distant from the sun 108 of the sun's

diameters. Shining on a certain surface, the intensity of an image also cast on that surface would be of the same intensity, when the lens functions with a stop F/108 therein. This is because the optical and the natural light pencils would correspond in solid angle convergence.

Another observation: A grain of white chalk in the sun will rest at zero distance, will be hemispherically illuminated, (on each of its sides or faces,) and will therefore be as intense as the sun itself.

Also: If the sun could be spread out in the form of a hemisphere so as to fill our whole sky extension, and at the same time retain its intrinsic intensity, a grain of white chalk on the earth would also be made as intense as the sun, in spite of the fact that now this spread out sun would rest, not at zero distance, as above, but at its present distance of 93,000,000 miles. The change of distance is simply not a factor of the brightness produced. The unchanged intensity is due to the hemispheric light convergence under both the conditions given.

Another phase of these basic laws at work reveals the fact that a pure white surface can not escape from the intensity, or the average intensity of the hemispheric space field which confronts it. To illustrate. The full sky shining at its maximum brightness of 512 Actinos, creates that same brightness on a horizontal white surface on the earth. Now if half of the sky extension should be completely darkened, leaving only half of it to function, the white surface would be reduced to half its former value, or to a brightness of 256 Actinos. But we also see that the average brightness of the whole sky expansion is now also 256 Actinos, from the fact that half of it has a brightness of 512 Actinos while the other half is at zero brightness. The brightness there, spread, in the imagination, over double the extension, gives the average brightness of the sky extension, as 256 Actinos, and the white surface has not escaped, therefore, from the average brightness of its confronting field.

If this is true for this rather symmetrical, "50-50" condition in the sky, then it is also true for all the complicated conditions of luminosity which exist about us in nature. Hold a pure white surface anywhere you choose and although there may be a thousand different light values confronting it, the surface will be as bright as the average brightness of all of them.

From this truth the student can make himself a light measuring tool from a little note book and some slips of tinting paper that will enable the intensity of any subject before the camera to be measured in Actinos of brightness, and the correct exposure found by simple division. Students need this working knowledge of light intensity. More than half the students in our schools have cameras but they are limited to "snap shooting" by their present ignorance of light values. Any reader who is interested in this reform should write the Editor of this magazine of that interest.

The photographic lens also works according to a certain light pattern, which is usually spoken of as a "point to point" condition.

Each point on the surface of objects before the lens spreads out its light before it in all directions. The lens front catches upon itself some of this wave and turns each ray in a different direction, with the result that these rays all pass through a specific point in space at a pre-determined distance behind the lens. If the light is caught on a ground glass, film or plate, at that precise

distance from the lens, an "image" of the outer scene is formed thereon, by means of the "point to point" light pattern which is functioning there.

The "pin-hole" camera varies this pattern of light play somewhat.

The law of brightness plays only behind the lens, not before it. For example: The sun is about 400 times as far from the earth as the moon, yet in photographing them, the distances are irrelevant and only their respective brightnesses need be considered.

The theoretical act of illuminating the molecule, in open nature, becomes practically, in photography, the illumination of the silver grains in the film, and what has transpired with the light on the opposite side of the lens is entirely irrelevant to the problem.

Mercury is 41 of the sun's diameters distant from the sun. If we focus an image of the sun with stop F/41, that image will be as bright as the natural sunlight on Mercury.

Another condition: If in some local spot on the earth a widespread cloud of even density throughout should be suspended, we could carry our grain of white chalk about both in the atmosphere below the cloud and in the cloud itself, without altering its intensity.

I would like to hear from some ace who has risen with his plane through two or three miles of fog and come out into the sunlight above. I believe that the intensity within the mass is the same throughout, until arriving very close to the top of the bank.

This is the law by which Vail explains the tropical conditions around the poles before the great vapor canopy descended to the earth. This mass carried its light and heat around the world and when the cooling earth reached the right condition, first at the poles, for the precipitation of this mass, the sudden downfall of snow there not only created the ice age but at once caught the tropical animals, burying and freezing them, and today we find them there with the tropical food preserved in their stomachs and the seeds of tropical plants in their hollow teeth. (See Vail's "The Earth's Annular System.")

Then there is the true light pattern which the scientists have used erroneously for more than 300 years in explaining intensity variations; that of the issue of energy from a single luminous point. Imagine a single molecule of matter being illumined by such a point source. It can receive from it but a single light ray, which single ray can not possibly create visibility.

Imagine the absurdity of saying that a fog bank is illuminated by the activity of a single one of its floating particles or that a gas flame was formed by the combustion of a single gas molecule.

The truth is that the single point in a light source reveals the intrinsic intensity of the mass, while the number of these points in a flame establish its light creating value. For example: The combustion of a molecule of sperm gas, as in the candle flame, sets up a weaker luminosity than does the combustion of the kerosene gas molecule, as in a lamp flame, or the gas molecule in a gas flame.

The size of the luminous body, or the number of such molecules at work, is what determines the light giving power of a flame. For this reason, to get a standard candle, it was necessary to size it so that it would burn a pre-determined number of grains of sperm per unit of time. Thus, by turning up a gas or a lamp flame we do not increase the intrinsic brightness of the flame but only its size.

There are many light problems besides those of light patterns and intensity variations.

Problems of eye protection, as against snow blindness, etc.

The mechanics of the camera optics, to enable things to be enlarged and copied exact size, etc., on the film.

The problem of the art of illumination as in the work of the illuminating engineer and the forester.

The problem of the art of illumination as for the artist and the photographer, so as to enable students of the art classes to make portraits with their home window light, in any desired pattern of light and shade effect.

The problem of the working value of lenses, or of the solid angle of the light pencils which they cast. With this the student can use grandad's spectacles and with cardboard make a camera that will function by strict known law, and take pictures, if desired, up to life size. The stops in this camera would be evaluated in units as easy to comprehend as units of distance and area, and the student would be able to fix these stops from what they should be able to learn in their study of physics in the schools.

The problem of the brightness of subjects in unit terms.

The problem of the speed of films and plates.

The simple mathematics of exposure by division.

And that of using the moving picture camera with precision.

C. FRANCIS JENKINS

(From the Richmond, Indiana, Item)

C. Francis Jenkins, inventor of the motion picture projection machine and holder of more than 400 foreign and domestic patents, is dead at his home in Washington, Wednesday, June 6.

Born near Dayton, Ohio, Mr. Jenkins spent his boyhood near Fountain City and Richmond. He attended Earlham College, accepted a position in Washington, and then became interested in inventions.

Upon a visit to Richmond, June 6, 1894, Mr. Jenkins invited members of his family and friends to witness the operation of a motion picture machine. His projection machine was set up in the rear of Jenkins' Jewelry Store, and Richmond gained the distinction of being the first city in the world in which a motion picture exhibition was held.

From that time on Mr. Jenkins devoted his genius to the perfection of many devices and instruments which gained him international fame. Radio photography, television, radio movies, improvements on airplanes and hundreds of other practical and technical questions engrossed his inventive genius.

He recognized no limits in the field of human achievement and believed every barrier in the way of scientific progress could be overcome. Like all geniuses, Mr. Jenkins was enthusiastic over the possibility of success in any project that claimed his attention.

Equally as interesting was his belief that a great discovery usually had been the result of an avocation, a plaything during rest or leisure time.

"Each has been the result of someone's riding a hobby, a kindly soul tinkering around in the woodshed with what the neighbors were pleased to call his 'crazy idea,'" he said in an address here a few years ago. "I have always observed that a new thing always originates in a single brain, usually the brain of a poor man. It is not the product of great wealth and a great laboratory. Money only develops, it never originates. I guess because money does not work in a woodshed."

Here is a truism which the boys and girls who are leaving high schools and colleges by the thousands this month should take to heart and ponder over seriously.

REORGANIZED DEFENSE FORCE BEGINS SERVICE

By GEORGE J. LANCASTER, *Lieut. j. g. C. N. M., Approved by Gene Owen Hagberg, Lieut. C. N. M. in Charge of Recruiting*

STANDING at attention, their right hands raised as they repeated the words of their oath of service administered by Commander L. F. Brown, California Naval Militia, one hundred and fifty officers and men were sworn into the Naval Militia, June 20, 1934, at the Naval Reserve Headquarters, 1965 South Los Angeles Street.

Grouped into battalion formation, the men, mostly from Hollywood, who were previously trained in the R. O. T. C. regiments, together with their line and staff officers, who are naval veterans of the World War, marched into the headquarters and formed a long line. Commander Brown upon being introduced, declared it to be the first time he ever had had an opportunity of viewing such a number of clean cut youths so well trained.

These men were recruited by Lieutenant Gene Owen Hagberg, aided by Lieut. j. g. George J. Lancaster. "Because of his diligent efforts in recruiting such a large number of men at one time and for his facility in recruiting," said Commander Brown, "I am placing Lieut. Hagberg on my staff as recruiting officer with the whole of Los Angeles as his base and the whole of California to work in."

Toward this end Lieut. Hagberg has made plans to fill the complements in the ranks of the Los Angeles area to their capacity. In addition Lieut. Hagberg has been authorized by Commander Brown to bring the three regiments for the state up to six thousand men.

The fourth division, comprising artificers, officers and men is now in course of organization. This will in-

clude cinematographers, laboratory technicians from Hollywood, and the photographic corps. Having set this division well on its way Lieut. Hagberg has turned the division over to Commander Brown, with Lieut. j. g. James J. Palmer as cinematographer officer. Other branches in the artificers will comprise the engineering forces below decks. The aviation unit is headed by Roy Klaffki.

Marlin spike and seamanship instructions has been assigned to Lieut. j. g. Lancaster, navigation officer, of unit.

The Militia was organized in 1889, but after being taken into the United States Navy during the World War, remained inactive until recently, when George Hearst, Commodore, C. N. M., started the reorganization that culminated in the recruiting of such a large personnel.

Said Commodore Hearst: "It is a source of gratification that patriotic men of California are building a powerful reserve force to supplement a strengthened Navy, keeping ever in mind the words of George Washington, who left us an abiding lesson which is just as true today as the day he uttered it, that the true way to preserve the peace of a nation is always to be prepared for war."

Applications and information regarding enlistment may be obtained at the recruiting office, 1605 North Cahuenga Avenue, Room 11.

The International Photographer is proud to state that much of Lieut. Hagberg's fine work was done right here in the offices of this magazine.

THE CAMERAMAN AS DIRECTOR

By JACK ALTON

(One of our boys way down in the Argentine)

QUITE often it is observed, especially by one who dwells in a steamer trunk, that when in need of something, let us say a pencil, he goes out and buys it; that done, into the trunk it goes. Now, if instead of buying a pencil one would take the trouble of looking for it in the trunk, most assuredly he would find more than one there.

Very similar is the case of the producer looking for a director. He usually takes a trip to Europe, a rubberneck ride around Unter der Linden in Berlin, a peek behind the curtain of the Parisian night life and he returns with a genius. How much simpler it would be to phone for one right under the "Great Wall" of the studio, in a place so near and yet so far from them, the place that is recognized as the camera department, a place where there is more directorial talent hidden than any other place in the world.

We must admit that many a cameraman would not be attracted by a mere directorial assignment. They have already reached their life ambition; they have become golf champions or baseball and football specialists. They usually go out for a smoke while the director rehearses. Then there are others who say little, but think a lot; who have accumulated a wealth of motion picture knowledge and that's where the future director will come from.

Many of the few cameramen here have been given a megaphone and failed as directors. But why? They failed because they remained cameramen. They kept on worrying about the photography, ordering lights, etc., thereby driving both the cameraman and the gaffer absolutely crazy. The result? That the picture was neither photographed nor directed.

It is contrary to reason to photograph and direct simultaneously. The new director must forget that he ever was a cameraman. By watching the actor's face through the blue glass, one sees, at least one should see, the light effect desired, whereas looking at it from the director's point of view one receives the dramatic expression. It is for the director to see that the author's mind, spirit and thought are faithfully reflected upon the mind of the audience. This is an extremely difficult task and far from what the cameraman should concentrate upon.

Both in Germany and in France one of the best hits of the season was directed by ex-cameramen. I use the expression "ex" because both *ceased* to be cameramen. They focused the attention upon the direction and left the photography to its proper authorities. The great success of these two young directors has proven the value of camera training.

One of them is entitled "Le Bataille," directed by Nicholas Farcas, a good friend of mine who served for years as the unknown soldier; his picture is a knockout. The other is called "Fugitives", a Chinese story directed by Gustav Usicky, also an ex-cinematographer. At last things are moving. The boys are getting a chance; a chance well earned. There are many good boys in Hollywood "659" who have lost faith. For years they have been waiting for their chance. For years directors got by with their ideas; for years yokels got the credit for the work of cameramen. I do hope that a producer will wake up and start the ball rolling. It will serve as a safety valve of the over congested camera department. The pressure is too high.

In Europe a cameraman is considered an important

factor on production. These new directors have realized this and before production prepared all angles and effects, thus by powerful photography have added to the value of their respective pictures.

In the States, seldom if ever is a cameraman called upon to participate in a story conference or even handed a script to read over. Whose fault this is we shall not discuss here. It is generally on the so called first day of production that he meets his director and begins to find out what the story is all about. And only after the director has paced up and down nervously biting his finger nails and pulling his hair, wondering where and how to get started that the cameraman is consulted and called to the rescue.

We have witnessed emergencies when the unit was split or, due to tropical fever or the Johnny Walker disease the director did not show up—thousands of miles from the studio the cameraman had to take charge and, in most cases, put it over. What would the average director do in a similar situation without a cameraman? Probably he would have walked around the camera, to him a strange looking animal, then wait around for a while, glancing at his wrist watch, then finally capitulate. This only goes to show that in Hollywood today there are a bunch of fine cameramen ready to take the megaphone.

With more directors possessing camera training, soon there would appear a new technique, resulting in better pictures; for the cameraman is optically minded, a quality so essential and yet so rarely found among directors of today.

The public wants new ideas; the industry needs new blood! What's more, the producers would not have to go far for it. It is right there near their office in the place least suspected—the place called the CAMERA DEPARTMENT.

KING VIDOR FINISHES

In view of many recent attacks upon the screen by women's clubs, church organizations and civic bodies, King Vidor contends that the chief fault to be found with motion pictures grows out of the manner in which some producers have made love connote lust, in their stories.

"By dragging the highest of human relationships through a succession of sexy cinemas," Vidor points out, "they have muddled many unthinking people's understanding of what love really is. This applies particularly to impressionable youth, because of its inexperience."

In an effort to correct the misunderstanding, King Vidor unfolds an everyday romance in his new picture, "Our Daily Bread," against the panoramic background of current economic conditions, which have tested the faith of many wives and husbands in one another, of late years.

Dramatically the plot brings out simply that: "Love is not love which changes when it alteration finds," as Shakespeare defined. The hero of "Our Daily Bread," played by Tom Keene, is truly a great lover—not only to his wife, Karen Morley, but of his jobless fellow men and woman as well, for he helps them to solve the bread-and-butter problem for their little ones, via the back-to-the-land movement.

When St. Paul wrote to the Corinthians: "And now abideth faith, hope and love, and the greatest of these is love," he did not mean wishy-washy sentimentalism or the so-called love of modern sex-movies, but rather the fine faith of men and women in each other, in the contest of life, enabling them to carry on together over the rough spots, to victory.

And such a love-story King Vidor has filmed out of the front-page news of the day, in direct response to the overwhelming demands for more wholesome pictures. "Our Daily Bread" will be released by United Artists, this fall.



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TELEPATHIC EXPERIMENTS WITH RADIO MIND

By F. H. DU VERNET, *Archbishop of Caledonia*

(Contributed by Delmar Whitson)

BISHOP Du Vernet, some months ago, wrote a comprehensive article on "Radio Mind" for readers of this magazine. It created tremendous interest throughout the scientific world and Rev. Du Vernet here presents further instructions for those actually interested in experimental work. His theory is that thought can be and is radiated very much as a radio message, the only thing lacking being a tuned receiver. His experiments, purely scientific, have aroused real interest on the part of scientists, hitherto given to considering thought transference as merely a form of "hokum."—*Radio Journal*.

So many inquiries regarding my telepathic experiments are coming to me from different parts of Canada and the United States and there is so much misunderstanding in regard to details not mentioned in my former article in the June issue of the *Radio Journal* that, at the risk of some repetition, I wish to give to each experimenter the following definite instructions: Take an ordinary lead pencil about eight inches long, and a bright latch key weighing a quarter of a dollar. Tie a string to one end of the pencil. Allow eight inches of string and tie to the key. The bright metal helps to attract the eye and the weight of the key helps to keep the string taut and aid the swinging. There is no other virtue in it than this. The index card which I use is a little less than a semi-circle with a radius of six inches. The letters of the alphabet are arranged phonetically so as to economize space, on the circumference of the chart, as follows from left to right: A, (BP), (DT), (EI), (FV), (KCGJQ, "Start and Stop," L, M, N, O, R, (SXZ), (UYW), making in all 15 spokes to the fragment of the wheel. There is no merit in this arrangement except that it simplifies by similarity of sound. Begin by practising alone. Place the card on a table. Stand erect without leaning on anything. Take the free end of the pencil and hold it between the thumb and finger of the right hand, with elbow clear from the side to allow the muscles fair play. Let the metal bob oscillate freely about half an inch over the hub or center of the index card. Always begin and end with the "Start and Stop" spoke of the wheel which comes directly in front of you as you face the card. Concentrate your eye and mind on the key and think hard the movement "To and fro." Almost instantly the muscles of your body will respond to the thought of your mind and cause the pen-

dulum to swing to and fro on the "Start" index. Next try spelling out a short word, letter by letter, timing the concentration of your thought to correspond with the rhythmic swing of the pendulum. For example, say mentally "Swing to H," repeating this six times, then shift to "Swing to A," then to "Swing to T," and you have spelled hat. With practice you can go readily from letter to letter and even dispense with spelling, but be content to go slowly at first. The next step is to get your cooperating friend to practise by himself in the same way. Both now being convinced that a thought in the mind can express itself through nerve force and muscular reaction you and your friend are ready for an experiment in thought transference. Let your friend as he stands beside you choose a word and spell it out beginning on the "Start" and ending on the "Stop," while you hold the pendulum. Before he begins to concentrate his mind energy you must have the pendulum swinging to and fro on the "Start" fully under the control of your own mind energy. You then throw yourself into a receptive attitude of mind as you sympathetically visualize your friend. While you must keep your eyes on the pendulum and the card you must not consciously allow your mind to think of any letter, otherwise you will prejudice the swing of the pendulum. Dimly you will see the word spelled out and the pendulum come back to the "Stop." After you have gained confidence and have learned the secret of visualizing each other you can increase the intervening distance until you realize that mind energy annihilates space. My daughter and I began side by side, then went to opposite ends of the room, then one upstairs and the other down. Then with fear and trembling I went into the street as though material walls could intercept mind energy. Then a quarter of a mile, a mile, three miles, seven, a hundred, five hundred, etc. No difference could be detected unless there was distraction of thought. It is well to arrange coincidence in time, although the subconscious mind can respond to the memory of a message sent sometime before. Do not spend more than two minutes at a time on any experiment, as the mind soon grows weary with concentrated thought.

Remember, I want you to learn the scientific fact of thought transference, not that you may commercialize my system, but that you may without any mechanical contrivance keep radiating helpful and healing thoughts. Think what this world would become if we all, by radio mind, broadcasted peace and goodwill.

The strangest of screen tests is the one conducted recently at Metro-Goldwyn-Mayer for mechanical men, for a part in "Sasha Gerhard." The story deals with a race of mechanical men, half human and half machine, who are brought to life by a mad inventor.

* * *

Max Steiner, the Viennese musical director and composer, who heads the RKO music department, directed a new type symphony the other day. He stood on a platform on a catwalk about 100 feet above the studio stage floor and directed the rhythmic dance of a number of palm trees. The trees were manned by a number of men working ropes overhead. That not being enough a bonfire was made to dance in the "Tree Symphony."

This strange community, Hollywood, has many persons noted for peculiar accomplishments. Now comes Mary Carlisle, who can "eek" better than anyone else, which is excellent for recording purposes. Because the microphone is sensitive to high pitched sounds and freezes on many of the high female squeaks, Mary Carlisle's ability will set her apart.

* * *

Auto painting equipment was used to advantage to paint twenty-four of Hollywood's Show-Girls. They were herded together and then drenched for picture purposes, by large spray guns. After their hair had been covered by rubber caps and their eyes shielded with goggles they were covered from head to foot with stain for the native sequences of the RKO Radio picture "Down to Their Last Yacht."

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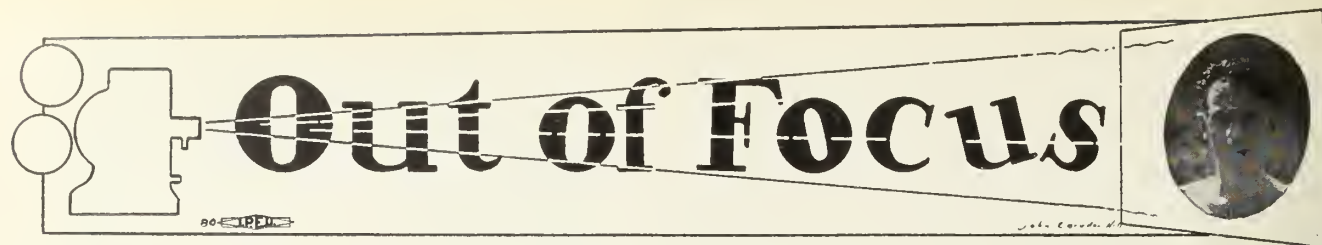
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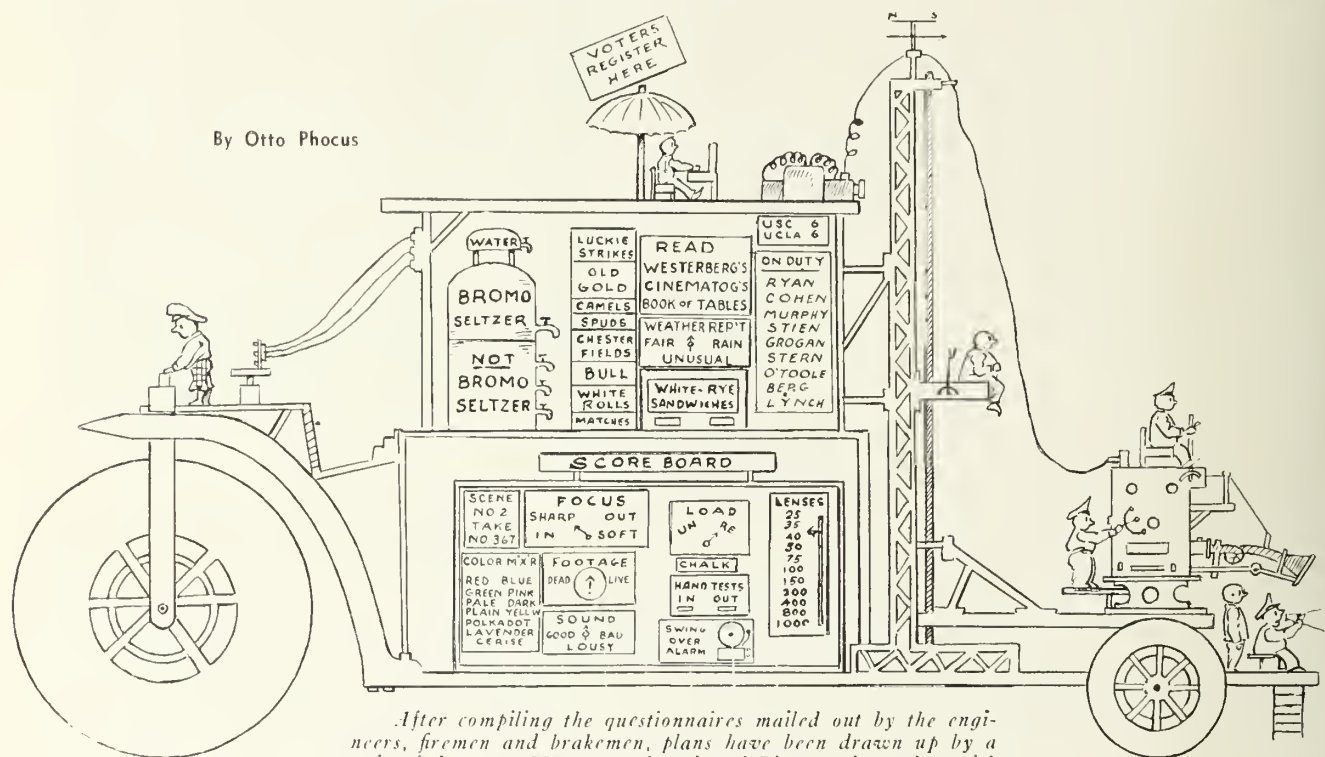
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LITTLE MAN, WHAT NEXT!!

By Otto Phocus



After compiling the questionnaires mailed out by the engineers, firemen and brakemen, plans have been drawn up by a pair of drawers, Messrs. Inkspod and Blurr and are herewith submitted for; what?

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A new departure has been installed on this model. The sound enters the matte box at the same time the pictures do and is photographed simultaneously. This eliminates interlocking devices and remote recording units and gives the sound men a chance to rest a few. Nice?

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The general consensus of opinion was: It was silly to move the whole camera around for pan and tilt shots. RESOLVED: That the matte box be lined with a series of mirrors and placed on a ball and socket. All that is necessary then is to aim the matte box at the scene and you have it.

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Certain cameramen and cinematographers prefer certain makes of lenses. This has been simplified by interchangeable name plates on all lenses.

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The law requires that voters be given time off to register for voting. The sound department registers the most (kicks) so this has been placed in their hands on the top floor of the ALL EVERYTHING CAMERA and prevents employees from leaving the set. As soon as flexible plumbing has been perfected we will add another device which will eliminate "leaving the set."

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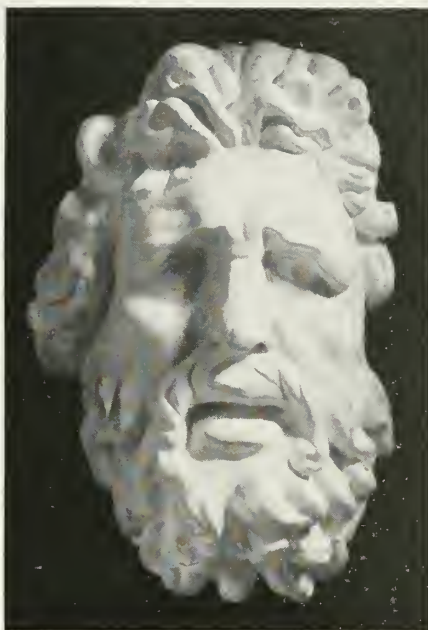
This is controlled from behind the camera by a man with a sensitive lever and a knurled knob, with the greatest of ease.

For additional information refer to Westerberg's Cinematographer's Book of Tables. For sale at main entrance to the ALL EVERYTHING CAMERA. (adv't.)

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HOLLYWOOD

KTH YEAR

AUGUST, 1934

VOL. 6
NO. 7



AN OFF-STAGE PHOTOGRAPH BY JUNIUS ESTEP—Director Frank Borzage is talking with Margaret Sullivan who is starred in the picture, "Little Man What Now?" at Universal. At the left is Douglas Montgomery who plays the leading male role. And behind the camera is Chief Cameraman Norbert Brodine and his assistant, William Dodds; at the right is the assistant director, Sergei Petschnikoff.—Exclusive to International Photographer.

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MOTION PICTURE ARTS AND CRAFTS

Vol. 6

HOLLYWOOD, CALIFORNIA, AUGUST, 1934

No. 7

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A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing, Film Editing, Sound Recording, Projection, Pictorialists.

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THE ONE GREAT WONDER

By THE EDITOR

JUDGING by recent issues of the public prints in San Diego, Los Angeles and San Francisco, the Western Coast of the United States is taking first steps toward the building of three great expositions to be held at times soon to be definitely announced in the three cities here named.

The San Diego Exposition is to be held first—in 1935. The Los Angeles Exposition, with a strong Spanish-American keynote, to follow in 1938 and San Francisco, in celebration of the completion of her great bridges, to bring up the rear slightly later.

San Diego already has much of the physical structure of her exposition plant in the site and buildings of her exposition of 1915 and 1916. All she would have to do is to install certain new attractions and exhibits and institute some novel scheme of pageantry and entertainment.

Los Angeles would have to start from scratch, as also San Francisco, notwithstanding the latter's successful World's Fair of 1915.

Notwithstanding present day conditions, it is not out of place to predict three separate successes in these three projects, for the West Coast is due for a few "time-keepers of progress," as President McKinley called expositions, and by the time they can be built, our national economic house can be put in order again.

"The Century of Progress" at Chicago was a tremendous success in 1933 and is doing pretty well at this writing. In fact if it had not been that the great Mississippi Valley is one vast conflagration this year, 1934, it would probably be doing as well right now.

There is nothing so interesting or intriguing as a World's Fair, nor is there anything so good for the community holding it when the event is put over in a successful way.

San Diego and San Francisco are coming back for more, and Los Angeles had a taste of World's Fair spirit in the recent Olympic Games.

The *International Photographer* can see great things for the West Coast in the holding of these three expositions and pledges its best efforts to help make them successful financially, economically, socially, artistically and every other way.

In this connection, the editor has a plan to propose for the consideration of the builders of the Los Angeles exposition and also of those of the big show at San Francisco, providing the plan should not be accepted by Los Angeles. There would not be time for San Diego to give it consideration.

Most expositions would have been financially successful if it had not been that, after the close of their terms of exhibition, they were forced to spend most of their profits restoring their exhibition sites to their original condition—the wonderful dream cities their promoters had built had to be utterly destroyed at their promoters' expense.

The big, central idea, therefore, would be to create something that would be permanent and permanently profitable.

Consider, therefore, with the writer, in thoughtful amazement, this plan for an exposition to be permanently profitable.

In the first place the idea must be novel and should be practical.

We people of these days know all the wonders of these times. The Chicago Fair has put all these wonders under one roof and gathered them into one place—and they have done well, but we are not

amazed, because we live with these wonders every day—they are in every city and in every home.

What then is different?

THE SEVEN WONDERS OF THE ANCIENT WORLD!

The Hanging Gardens of Babylon.
The Pharos of Alexandria.
The Colossus of Rhodes.
The Great Pyramid of Egypt.
The Temple of Diana at Ephesus.
The Temple of Jupiter at Olympia.
The Mausoleum of Artemisia.

Where are they?

Who has seen them?

Who would not love to see them?

There's the Biggest Show on Earth—profitable—forever!

Could all these world wonders be brought together in Los Angeles?

Would they be congruous?

Is the idea practical?

The first and only other time this idea was given publicity by the author was in the KANSAS CITY STAR, July, 1908. It attracted great attention and architects and builders were of the opinion that there was nothing impossible about the project.

It was conceded that the Hanging Gardens of Babylon could be fashioned into a fairyland of delight, adorned as they would be with the myriad plants, trees, vines and flowers; fountains, cascades, restaurants, dancing platforms, vari-colored lights etc. These gardens were built for the Empress Semiramis by her husband that she might not long too sadly for her home in the northern hills. They were built of terraces superimposed upon great arches of stone.

The Pharos of Alexandria was built by Ptolemy Philadelphus, at Alexandria. It was the daddy of all light houses. It was 600 feet high and contained more than 300 rooms—an exposition within itself. It was colorful and awe-inspiring—verily a volcano on a pedestal. At the exposition it would have modern elevators and would house thousands of exhibits. It would be an astonishingly beautiful object when lighted at night and would constitute the greatest beacon and observation tower in the world.

The Colossus of Rhodes was the figure of a gigantic man constructed of brass plates which stood at the harbor entrance on the Island of Rhodes. At the exposition a lagoon would be substituted for the harbor entrance. It stood for more than 600 years and was thrown down by an earthquake. The junk dealer who bought it required 900 camels to carry it away. It would be put to novel usage during the period of our exposition.

The Great Pyramid would be built mathematically correct, with the outside casing of polished stone and the interior passages and chambers except that it would, of course, not be built solidly of stone. This replica would be constructed of reinforced concrete and divided into floors for exhibits. There would be enough floor space in this one unit to accommodate an entire exposition like our smaller ones. It would be equipped with elevators, stairways, ramps and an observatory platform near the apex.

The Temple of Diana, at Ephesus, one of the most brilliantly beautiful buildings ever erected on earth, would make a glorious Gallery of the Fine Arts, both during and after the Exposition.

The Temple of Jupiter, at Olympia, also should be devoted to matters artistic. In itself it would be dazzling like a rare gem—alone worth a trip around the world to see.

The Mausoleum of Artemisia was built to be a tomb. It was constructed in memory of her husband, Mausolus, Prince of Caria, at Halicarnassus, in Asia Minor, and it was designed to excel all other tombs in beauty and grandeur. Judges of architectural masterpieces agree that the intention of the creators was carried out. In the ensemble suggested, this marvel of architecture, painting and sculpture would strike no note of sadness, but one of pure and unutterable beauty. The great tomb could be utilized as a glorious hall of fame.

Such a congregation of wonders, the crowning

achievements of peoples of all nations and of all times, grouped together in one place and restored in all their pristine glory and loveliness would be in itself the ONE GREAT WONDER and would make of Los Angeles the artistic Mecca of all the world. Millions would come to see it during the period of the exposition and millions would pay to see it every year thereafter, at a fair admission fee, so long as Los Angeles and this continent should stand.

If it's a dream—it's a grand and glorious one!

If its author is crazy—let be—for it is said that it's great to be crazy.

And—oh, yes, my hearties—*exposition* is an outworn term. If we hold the World's Fair at Los Angeles—with its fine old Spanish flavor—let's call it—

EXPO—FIESTA

(More—much more—coming!)



TELEVISION

For the first time in history, television was used on June 28, 1934, to advertise a forthcoming public event.

On that date, the Don Lee television stations W6XS and W6XAO transmitted visual announcements of the National Champion short-track Motorcycle Races, held July 1, 2 and 3, in the Los Angeles Coliseum. The races were sponsored by the California Association of Highway Patrolmen, for the benefit of their Widows and Orphans' Fund.

The announcement included several word titles giving information on the event, and shots of the short-

track racers in action. This type of motorcycle racing is especially interesting in that the dirt track upon which they are run is flat on the turns, as well as on the straightaway. This requires the racers to "broadside," or skid around the turns at high speed. The winner is usually the one who has mastered this delicate and unusual art to the greatest degree, since all make about the same speed on the straightaway. Light, specially built motorcycles are used, and although the races are particularly exciting to watch, the danger to the contestants is minimized.

Special permission to make these broadcasts was granted to the Don Lee station by the Federal Radio Commission. Commenting upon this action, Harry R. Lubcke, Director of Television for the Don Lee Broadcasting System, said: "We are particularly happy to lend the facilities of our non-profit television system to the support of this worthy cause."

The announcement was broadcast during the regular W6XS-W6XAO programs of June 28, 29, 30 and July 2 and 3. The Don Lee stations regularly broadcast Paramount features, Paramount shorts and Pathe Newsreels daily, except Sunday, from 7:00 to 9:00 p. m., Pacific time, and Monday, Wednesday and Friday mornings from 9:00 to 11:00 a. m.; W6XS on 2,800 kilocycles (107 meters) and W6XAO on 44,500 kilocycles (6¾ meters).





IN THE MOTION PICTURE PROP AND RESEARCH DEPARTMENT

(Associate Editor of International Photographer)

By EARL THEISEN



WHAT kind of a dress would a baby have worn for christening during the time of Napoleon?"

That is just one of the many questions that must be solved by the Research Department of a studio. The second question, "Where can such a dress be obtained?" must be solved by the Property Department.

During all their hours these professional question answerers are bombarded with questions. Who did this and when did that happen? There is nothing they are not required to answer.

It is amazing when it is realized the amount of research required in making a picture. What kind of buttons did a postman wear in England in 1915? Or, what did the police uniform of Vienna look like ten years ago? In each instance, it is the duty of the Research and Property departments to be accurate, even to the minor details. A slight error would be noticed and immediately scolding letters from fans would arrive.

A mistake never gets by; it is always noticed by someone out of the ten or eleven million persons who see pictures each day in the United States.

Back in the days when pictures were not taken seriously, mistakes were passed off as "license." In the "Black Maria," the first Edison studio, there were no props. The interior of the stage was bare and persons, while being photographed, stood before a black background.

Before 1900 it was more or less common practice to do without the elaboration of much furniture or other set dressings. In fact most of the early picture makers, notably Biograph and Vitagraph, painted part of the furniture on the canvas walls of their sets. It was a common sight to see a piano with a vase of flowers on top painted on a wall. It was the duty of the audience to imagine a beautiful piano in the set. Also, windows, chairs, and other pieces of furniture not in direct use in the picture were often painted on the wall.

One early Vitagraph picture which I have seen in a recent screening, by J. Stuart Blackton, of Vitagraph, shows the hero with the heroine sitting on his lap—and the hero was apparently sitting on a chair which was painted on the wall. Another such, shows the heroine playing a piano, while the hero leaned against it. The piano, too, was painted on the wall. But that was all right; love was the theme of the picture and the audience was thinking about that.

Of course, when picture making became established and acquired a box-office, studios were built in which were scenery and prop departments. Even with the established companies as late as 1910, the travelling units which were making "westerns", continued to use "flats" on which was painted much of the furniture. This was done to avoid carrying a lot of furniture and heavy props over poor roads of the sparsely settled western states. Usually these "western units" had enough "flats" which could be set up in a few minutes to make a "cabin set" when the desired

location for their picture was found. On these "flats" were painted windows and some furniture.

Many of these units however, settled down to definite locations. One such was sent to Hollywood, in October 1911, by the Nestor Films, which had its home offices at Bayonne, New Jersey. That was the company headed by David Horsley. They came to Hollywood looking for a new locality in which to settle to make pictures.

Hollywood, then, was not a part of Los Angeles, but a smallish village a long way from Los Angeles. Transportation between the two ran every two hours.

One of the men to accompany the Nestor Film Company to Hollywood was Joe Murphy, who is called "the Mayor of Cahuenga Boulevard", because of his long residence there.

When he, the first prop man in the film capital, came here, the items used in making motion pictures were borrowed from the neighbors. A chair, or a dining room table were borrowed easily, but if a more valuable item was needed, Joe Murphy had to cut the lawn or do some odd job in return for the loan. It seems his round and jovial landlady furnished more than her share of the props, but after a time she became irked. As Joe says: "She was tired of having her furniture taken to the studio and of sleeping on the floor while she waited for her bed to be



Example of a very early form of transparent glass made by the Romans. Often the studios use such items in the filming of pictures.

Roman tools used in the making of Roman ships during the time of Christ.

Courtesy Victor Merlo Collection Los Angeles Museum.

returned, so she gave orders to her housekeeper, 'don't let that fella have no more things'."

One day Joe was given a rush order by Al Christie, maker of comedies for Nestor, for eight pairs of curtains. Joe knew of no other place than his landlady to get them and he also knew better than to ask her for them. So he

went home and hoped she would turn her back long enough so that the curtains could be borrowed.

Joe was in luck; she was going to take a bath, but she had to wait the two hours necessary to heat the water. That was in the days when many Hollywood homes depended on the sun and a tank on the roof for heated water. While the landlady waited for warm water Joe waited and cast sidelong glances at the curtains, knowing that Al Christie was not a patient sort. Of course, Joe, like all prop men, got the curtains.

Joe Murphy in those days lived to gather props! Everywhere he went his eyes were awatch for possible items for his property department. He carried a horse-blanket with him and each morning when he arrived at the studio, there would be a horse-blanket full of odds and ends slung over his shoulder. On more extended forays, he drove a tired horse and wagon.

Through lack of entertainment facilities in Hollywood then, our Joe spent his evenings gathering props.

One man was the prop department. He did the research, washed the water-color scenery off the "flats" in readiness for the new scenes to be painted, ran errands and did such odd jobs as required. Today, the property departments in each of the studios employ fifty or one hundred persons, and in each studio there is maintained an elaborate research department. Now five to fifteen men in a "swing" gang for each set move the props about while a "set-dresser" and his assistant "do" the set.

Besides the Property Chief there is a prop buyer who knows where anything can be located. One prop buyer, Tom Fortune, at Paramount Studios, has been buying for twenty years. Years ago he was a singer for "Ediso-o-n-e Records" when these cylinder records were made of soft wax and when each record was an original recording which sold for as much as five dollars, this being before the days of duplicates or re-recordings.

When Tom Fortune started with Paramount Studios the prop department consisted of a pair of green drapes and the first props were kept in a de-horsed stable.

Today, the Paramount prop department is housed in a large building, and from it may be had about anything under the sun. If an item needed in pictures can't be located in short enough order it is made on the Paramount lot. A quick call from Cecil de Mille for an asp of the time of Cleopatra in Egypt, Roman glass or tools, old-time buggy autos, or a dog that can bark in the key of C, will be ready pronto.

When asked how he locates all the things necessary for picture making, Mr. Fortune showed a large phone book filled with addresses and 'phone numbers of companies and persons who can be called on to supply whatever is needed at a moment's notice.

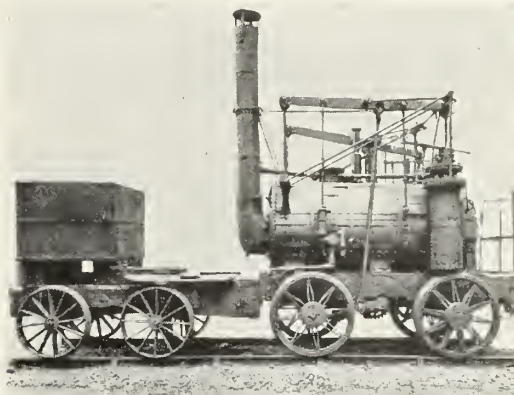
One company, the Western Costume Company, is a museum of costumes and unusual items. They have costumes of all periods from the Chiton of ancient Greece, which resembled a sheet or drape that was thrown over the head, to the bustles of the nineties. In fact, they claim to have over 200,000 costumes, which can be believed when the row after row, hundreds of feet in length, are seen.

Among their costumes are those worn in Joan-the-Woman, by Geraldine Farrar; costumes worn in Voltaire, by George Arliss; Cisco Kid, by Warner Baxter; Kid From Spain, by Eddie Cantor and many, many other notable costumes, including those worn by Douglas Fairbanks, Rudolph Valentino and other popular actors.

Besides costumes, they make their own shoes, wigs, ornaments and braids and whatever else is needed, in separate departments maintained for the purpose.

They have guns of all descriptions stacked like cordwood. While there I saw, it seemed, everything from tobacco cutters to an array of armor. It seemed there were about a ton of different buttons in all shapes and colors.

An important feature is the speed and sureness required in accurately furnishing props. If a group of period costumes are ordered, usually twenty-four hours are allowed, and in that time the costumes must be made ready, complete historically to type of braid, ornaments, shoes, description of manner of wearing and hats and



"Hobby Horse", bicycle which was invented in 1818. This is the first bicycle. Would a prop man be able to locate one of these?

"Puffing Billy", a steam engine of 1813, one of the early steam engines. Any day now one of the prop departments will be looking for one of these.

Courtesy Ransome Matthews Los Angeles Museum.

other accessories.

The value and importance of research and correctness is here apparent in that, if a costume is supplied, and when the director with an overhead of perhaps several thousand dollars an hour was ready to shoot, the costume was found incorrect,—well? Often through an oversight the studios overlook the ordering of some important item. Then one of the many costume companies save the day.

After each time a costume is used, it is disinfected and cleaned in readiness for the next time before the cameras.

In making a picture, when the assignment is given the writer to adapt the story for filming, a duplicate assignment goes to the prop and to research departments of the studio. They list any unusual items and immediately start out to locate them. When the script is complete a copy goes to these departments, from which a list of the props needed, scene by scene, is made up along with the probable expense necessary in supplying same. A trained duck, or an old vintage auto, costs the studio about twenty-five or fifty dollars a day.

Connected with the prop departments in each of the studios, are gun departments. At Universal, the gun room is in charge of "Ollie" Emert, who can supply smoke in liquid form or cloth to be burned or cartridge form; plaster-of-paris guns for actors who are to fall off horses; swords and bayonets that will telescope so that actors won't be hurt and guns with blank cartridges. It is the duty of the gun department to supervise explosions and

(Turn to Page 23)



THE ART OF SELLING PICTURES

By KARL A. BARLEBEN, JR., F.R.P.S.

HAVING co-authored the book *Cash From Your Camera* and conducted a department on freelance photographic journalism for a year in *The American Author* magazine, I feel more or less well-equipped to discuss the problems of selling pictures to the newspapers and magazines. Actually, the problems involved could fill volumes, hence I can but briefly touch upon a few of the more frequent matters which are brought to my attention by budding Journalistic Photographers.

Naturally enough a great many owners of cameras, hearing that real money is paid for pictures, become bitten by the "press photography" bug. It takes a bit more, however, than to be just bitten by the bug. One should first analyze himself before making any investments in equipment or attempts in a field for which he may not be entirely suited. What are the qualifications? That's a little difficult to answer directly, for as in everything else, more than one quality is necessary. The prime requisite is a thorough knowledge of photography. Unless one knows his camera intimately, how can he be expected to turn out satisfactory work? It is true that a good many newspaper staff photographers know only the rudiments of photography—but they have other vitally necessary qualities which get them by, and all they do is get by—they are not the top-notchers by any means. An artist who has but scanty knowledge of color values doesn't go far as an artist. Just go with the press photographer. As the camera is his canvas, brushes, and paints, he must know it and its principles. Or else—

And when I say know the camera, I mean something more than its mechanical operation. As you have probably discovered, photography is more than releasing the shutter. The more one knows about photography the better. A good many youngsters seem to forget this. They think that because they own a camera they can set the world afire with it. Not so, unfortunately. More than the camera is needed. The first important necessary quality, then, is a good knowledge of photography. In fact, as far as camera manipulation is concerned, one must be able to handle the camera without even thinking of it. Learn the operation of the camera so that each movement of the fingers becomes mechanical. The reason for this lies in the fact that news pictures must be caught "on the fly", as it were. The mind should be able to concentrate on the subject. It has plenty to do in order to do that properly. When the thoughts have to drift back to the exposure about to be made, one loses track of the subject—momentarily anyway, and in this work, a moment may be all the photographer gets to secure his picture. Speed, plus accuracy, are demanded. Are you up to it without plenty of study and practise? No one is.

Another personal quality that is most important is what is known as the "nose for news." What's this? Merely the ability to recognize a news story or idea which has salable possibilities in picture form. Pictures that sell are to be found here, there, everywhere, yes even right in your own back yard—if only you can "see" them. The "art" of sharpening the eyes and mind in this direction, it will be seen, is vital, for without the "nose for news",

what are you going to make pictures of? That is, if you want to sell them. Now this faculty may be cultivated. In most successful press photographers it appears to be an inborn characteristic—it's part of their natures, and they can spot a news story a mile away. But through diligent plugging, anyone should be able to produce enough for all ordinary purposes, to begin with, anyway.

One often hears a would-be free-lance wail: "If only I could travel." Or "If I only were in Florida, or California, or New York." It is characteristic of the human race that the other fellow's lawn looks greener and fresher than our own. This is sheer bosh, of course. The fellow in sunny California yearns to be in New York, where "things are always happening." The chap in New York longs to be in California, where "countless interesting picture-subjects are to be found on every street corner." If these two lads were to realize that each is in a picture-productive location and work it, they would be turning out pictures instead of lamenting their misfortune. The secret is to work your own territory, or at least the territory you happen to find yourself in at the time. It is not necessary to travel. It is not necessary to move. The country photographer has just as many interesting things to photograph as the city cameraist—the subjects may be a bit different in type, but nevertheless all are interesting fodder for the presses.

As for the camera equipment, no one seems to agree as to what outfit is best, for each photographer's ideas are different. If a camera turns out the quality of work that is expected in press photography, that should be all that is required. There are certain points in camera design and construction which should be noted if one seeks a truly all-purpose press camera. The first thought would be to turn to the newspaper photographers and examine their equipment. One finds that the most popular camera in the United States for press work is the Graflex, and its



Blocked Kick, winning game for University of Florida vs. University of Maryland. Leica 111629. F. S. Fellows, 813 Grand Central Ave., Tampa, Florida. 90 mm. Medium Telephoto. f-4.5 1/500 second. No filter. Dupont Superior film. Modified d-76. Paper, P.M.C. No. 11.

brother the Speed Graphic running a close second. The Zeiss Orix camera may be considered a third.

The first thing that qualifies the Graflex and Graphic cameras for press work is their sturdiness. Press photography demands a rugged camera first, last and always. We used to sit on our Graflex while awaiting a parade, the mayor, or whatever the event was we were assigned

to shoot. Try that with any other camera! The Graflex is a bit bulky at times, and for that reason the Speed Graphic is preferred by a good percentage of "lens hounds." It incorporates the same features of the Graflex but dispenses with the reflecting mirror, hence lacks the size and bulk of the Graflex. Both cameras are noted for their sturdiness, and have been known to function for over a period of eighteen years. The Zeiss Orix (4 x 6 in. negatives) is used a great deal by New York photographers for it is light in weight, and possesses all the desirable features save a focal plane shutter—which is not, after all, so terribly important except in rare instances.

The free-lance may easily overlook the ruggedness in his camera, for his will in all probability be an easier path than the staff newspaper photographer's. Therefore any convenient camera with suitable lens and shutter equipment may easily be placed in service. A little-known (unfortunately) camera which I personally believe a most favorable camera for the purpose under consideration is the Plaubel Makina. The Makina is, admittedly, somewhat costly, but in defense of its price I should like to point out that to the photographer who wants the best, it is well worth every penny of its cost. It is small, folds surprisingly compact and small, is equipped with an Anticomar f:2.9 lens, has an interchange-lens feature, uses plates, cut film, film pack, or roll film. Focus is established either by ground glass or automatic range finder. In Europe it is a popular press camera.

Since the introduction of the miniature camera, many press photographers have turned to it as a "second" camera, and it is even being used as the "one and only" in a great many cases. As a second camera it is unrivaled, especially for those hasty, hard-to-get shots. As the candid camera it is the only thing, as anyone who has followed the type of news picture of today will recognize. The Leica and Contax are the chief cameras employed for press and candid work. They are so well-known that a description of them would be superfluous. They are particularly valuable when equipped with a speed lens (such as the Hektor 73 mm. f:1.9 or Summar 50 mm. f:2 for the Leica, and the Sonnar 50 mm. f:1.5 for the Contax).

Once in a while I am asked if one of these miniature cameras will do for serious free-lance press photography. The answer is obviously in the affirmative. It is true that they require a bit more careful technique, but that is as it should be. The day of the careless hit-or-miss photographer is definitely over. The new school (miniature camera photography) has changed all that.

So you see that it matters little what camera you use. It is important how you use it, however. That's the big point that one should not overlook—and too many do, much to their regret later.

The negative size used to be a matter of importance in press photography. The usual standard in the United States always has been—and still is in a measure—4x5 inches. The Graflex and Speed Graphic of this size are favored. In Europe, no standard seems to be in effect. They lean towards smaller sizes, however, and a 9x12 cm. (3½ x 4½ in.) is considered a big negative for press work. Today, all over the world, thanks to the Leica and Contax cameras, negative sizes run down as small as 1x1½ inches. Due to the increasing popularity of fine grain development, negative size is no longer a factor of importance. The feeling is that if the same results can be produced with smaller negatives, why not take advantage of the saving thus effected? Surely smaller negatives cost less than larger ones, and besides, equipment is smaller and less bulky. *Results can be made the same—* this has time and again been proven.

If one is a bit afraid of the miniature size negative, let him consider the 2¼x3¼ and 3¼x4¼ inch sizes. The Plaubel Makina, previously mentioned, accommodates

2¼x3¼ inch negative areas, and turns out work which is not only comparable, but often superior to that produced with larger negative cameras. I have made, and also seen, pictures from tiny Leica negatives which were in every way comparable to 8x10 contact prints. So negative size need not bother anyone in these days.

In the old days, and even today in some laboratories, I guess, developing technique consisted of dumping a handful of metol, sulphite, carbonate, and a few pinches of hydroquinone into a tank of water. That was the "soup" or developer. At any rate, it worked sufficiently accurate for the purpose of the newspaper. Today things are much



Coaling at Watsonville, Calif. 99928 Leica D. Henry Washburn, 106 Front St., Santa Cruz, Calif. Hektor 73 mm. f:3. 1/30. Dupont Superior P. Diamine. Eastman New Bromide.

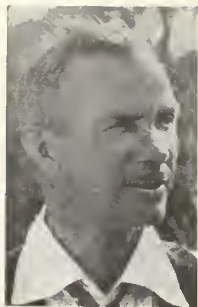
different, just as the quality of pictures seen in print are different from what they used to be. Since the introduction of the miniature camera, all eyes have been turned towards fine grain developing. While fine grain formulas were brought forth primarily for users of the miniature camera, owners of larger cameras, too, became interested. Today, then, we might say that everyone uses a fine grain developer, regardless of whether for small or large negatives. A new sense of cleanliness prevails. Gone are the sloppy darkroom and careless habits.

The "new deal" formulas should in any event be used. They undoubtedly produce better results in the long run if everything is taken into consideration. The free-lance may not be in a position to equip a darkroom to work in, hence finds it decidedly inconvenient to mix chemicals. Again, others may be too lazy to do this (as is yours truly). For occasional developing, and even when it becomes necessary to do so frequently, the prepared chemicals will be found most satisfactory. Liquid developers such as Rodinal, Micrograin-85, M.P.G., and others are excellent. If one prefers powder which is simply dissolved in the required amount of water, Boratol, Hauff's Glycin, Perutz Fine Grain, Agfa Fine Grain, Nografin, and D-76 will fill the bill. The Burroughs Wellcome Rytol and Tancol are recommended—little pellets or tablets which are crushed and dissolved in water make splendid developing solutions.

News men have always adhered to glass plates, mainly because such a variety of emulsions is available and the glass plate can be enlarged from while still wet. However, film has definite advantages over plates as far as the free-lance is concerned, and he is advised therefore to use it. Contrary to the usual opinion, film negatives may be printed and enlarged wet as easily as glass plates if speed is of importance, which might be considered rare from the free-lance's standpoint.

The type of print which meets with approval of editors is one which is needle-sharp with a good deal of snap and contrast. Glossy ferrotyped prints are preferred, and

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MOTION PICTURE SETS

Their Architecture and Characterization

By PAUL R. HARMER

MOTION pictures are produced with careful consideration given to proper architecture, to support the characters portrayed.

In ancient Greece, the Ionic order of architecture was considered feminine; the small slender columns with the voluted capitals symbolized the slender female figure and the roll of hair on the sides of the head. The cornice and trim were finely carved and decorated. The Doric type of architecture symbolized the masculine; the columns are larger than the Ionic and are plainer, while the capitals are circular, with rings of moulding thereon, symbolizing the head bands worn by the men of that period.

As we pass through other periods, the Egyptian order with its sloping walls reminds one of the strength of their early discoveries which formed the foundation walls of civilization. The Byzantine, with its barbaric splendor; the Gothic which symbolizes the spiritual growth of Europe, the awakening from ignorance of a strong race. The Renaissance, or revival, which swept Europe after the crusades, all the ideas borrowed from earlier periods, yet simplified or enhanced; and the skyscraper of the Twentieth Century which symbolizes science and education.

The Aztec should not be forgotten. His buildings show his strength, yet his superstition and cruelty are everywhere apparent. India with its caste and China with its unnecessary bric-a-brac symbolize the races that put their best efforts into useless ceremony and superstition.

When a story has been accepted by the studio motion picture officials for production, a copy of the script is sent to the art department. Here the story is carefully read, the characters are studied for their good and bad points of temperament, physical qualities and station in life. The story is reviewed from the standpoint of locale, situation and plot. The settings are then made in keeping with as much as possible of the foregoing.

The same is true for wardrobe, make-up and props. Tempo in direction and photography is also very important. Many fine stories have been spoiled by being off in their tempo. Many directors will refuse to start a production unless they can start with the first sequence first, thereby getting themselves into the real feeling of the story, which they accelerate or retard, as a musician does a fine selection of music. Some art directors employ a similar system. Proper characterization is the aim of all actors and artists. That is why a production made by a major studio usually excels the independent production. It costs more to have everything as it should be.

To one who is unaware or uneducated in the proper periods and characters, much of the beauty of a fine production goes unobserved and unappreciated. However, the public is gradually being educated and people are slowly demanding a higher standard of art in their entertainment. The predominance of the educated public is in large cities for this is where the best productions have their largest patronage.

Many thousands of dollars are spent on settings, yet they seldom exceed ten per cent of the total cost of

production. Some studios make a super picture once a year, or once in two years; they build a group of new sets and then revamp them for the rest of the program that follows, sometimes paying little attention to the finer points of period or character. (These are termed "cheater pictures.") This is especially true since the depression.

In picture No. 1, courtesy United Artists, "Looking for Trouble," this cafeteria is modern, the straight lines and the thick walls indicate that it is located in a large building in a fairly large city. The smooth, light colored walls, white table; the plainness and simplicity suggest cleanliness. This setting aids the eye in watching the principals and is very well adapted to fast moving comedy.

Picture No. 2, a portion of a typical Renaissance living room, is strictly French in character. The formal pilasters, arches, drapes, floor and furniture suggest culture and wealth. This is an ideal setting for drama and intrigue, yet there is a suggestion for relief and lighter entertainment.

Picture No. 3, courtesy Paramount Studios, from "Many Happy Returns," is a modern radio station parlor. Formality is very well expressed in the lines, moulding and dressing, yet it is versatile enough to lend itself to comedy-drama in a metropolitan city.

In Picture No. 4, romance is everywhere. The Ionic columns and Rondo suggest the strong influence of the woman. The stars suggest the dreams and hopes that romance brings to the thought. Glamour, music, entertainment and food are all present to satisfy the physical. Romance can be brought to a high point of understanding in this setting.

If you think back over the picture that you have liked best, you will realize that it was personality plus character plus situation that gave you the thrill and held your interest.

Before the advent of sound into motion pictures, we were accustomed to seeing large sets filled with crowds of people. D. W. Griffith's "Intolerance" was the first to employ so much construction. The next was the ballroom scene from "Cinderella," made by Famous Players; a glass stairway with jets of water sprayed up against the treads and risers, which made the stairway appear as a waterfall, with dainty ladies and gallant men walking up and down.

The ballroom floor was covered with plate glass laid on black velvet, giving the appearance of a beautiful lake whereon the dancing couples tripped lightly to beautiful music.

"Ben Hur," with its beautiful coliseum and arena required seven hundred and fifty carpenters who spent twenty-one days in building. "The Hunchback of Notre Dame" and "Kismet," each required four hundred carpenters and plasterers thirty days, besides a small army of scenic artists and set dressers.

"The Winning of Barbara Worth" employed more miniature technicians and cameramen than any other production, while "Hells Angels" ran a very close second; fifteen cameramen were steadily employed on this last production.



Top—Left No. 1. Right No. 2.

Lower—Left No. 3. Right No. 4.

The construction of sets is varied. In Picture No. 1, wooden frames were covered with dyed cloth, the tacks concealed inside the joints. This type of set has become popular since the advent of sound; the cloth allows the sound impulses to pass through and thereby reduces reverberation.

In Picture No. 2, the pilasters are of wood veneer, covered with marbled paper; the large opening, drapes and rug help to balance the sound absorption and reverberation to a natural condition.

In Picture No. 3, the set is a veritable sound box, except for the doors and ceiling openings. With this condition it is necessary to use cloth covered frames in order to take care of excessive reverberation.

In Picture No. 4, we have almost an outdoor condition which is ideal for most types of construction. The

columns and rondo are made of wood; the walls are of plyboard to keep the music alive and the cloth back drop acts as a slight absorbent to reverberation, but passes most of the sound freely. Nearly all the walls and parts of sets are easily moved or put back into place as required.

Sets seldom have ceilings, for this opening above is a great help to electricians as well as the sound engineers. Nearly all spotlight platforms are hung from the trusses in the roof. This leaves the stage floor clear for action when the walls are moved out of the way.

Characterization and construction of motion picture settings require imagination and creative force of the finest art minds in the world. Here, indeed, is a class of studio employees whose great efforts and invention are second to none.

ANNOUNCING NEW EXPOSURE METER

Photo Utilities, Inc., 152 West 42nd St., New York City, is announcing the new Photoscop exposure meter. The Photoscop is in many respects a radical departure from the type of electric cell meter we have become accustomed to. To begin with, a tremendous range of exposures is possible so that true readings can be made in very unfavorable light, even at small diaphragm lens stops. Secondly, it is usable for *any* type and make of camera, either still or movie. Two sets of lens diaphragm openings are had at a twist of a ring, the English system or the Continental. Shutter speeds are calibrated for movie cameras, still cameras, and the Leica. In brief, the Photoscop is a really universal meter.

It gives direct readings accurately in an oblong window which faces the user as he holds it at about waist-level. A leather strap is fitted to the meter so that it may be carried suspended from around the neck. It is thus possible to read the meter without even using one hand to hold it. The meter casing is of rugged metal, and offers a dust-proof housing for the interior of the meter.

Technical aspects of the Photoscop will be found in the advertisement in this issue. Because of the universal capabilities of the Photoscop, it would appear to be destined to become one of the most popular and important meters of its type in a short while. Why not write to Photo Utilities, Inc., 152 West 42nd St., New York City for further details?

CINEMACARONI

(It's better with a little sauce.)

By ROBERT TOBEY



So you want to know why this is called CINEMACARONI? Come to think of it, so do I. Let's sit down and think this thing out. First you frost a 4-ounce glass with ice—pardon me, that's a story we'll work on later in the day. Ennahoo, this blurb is chiefly about motion pictures, which, in some circles, are dispassionately grouped as THE CINEMA. To the initiate, motion picture film is known as SPAGHETTI. So this is called CINEMACARONI, because I can't spell SPAGHETTI. I can dish it out, but I just can't make it. I've never been on a Cook's Tour.

I'm warning you now, this bowl of light lunch I'll attempt to serve you will consist of some fact and some fiction. It's your problem to figure out which is which. I'll give you a tip—the stuff I make up out of my own head will give off a hollow sound when knocked. (No ad for Ethyl. Hi, Ethyl—let's get Associated.)

Frinstance, there was the ingenious case of the Hollywood gag man and wit who had been out of work for several months—he bought himself a toupe and got a job with the Pacific Electric Railway as a wig-wag.

Carry on from there.

ADVANCE NOTE

Next month this department will commence installments of a new and different publication called—

HOW TO TAKE PICTURES IN

THREE PARTS

- Part I. How to Shoot Them.
- Part II. How to Examine Them.
- Part III. How to Tear Them Up.

DAILY INCONGRUITY. An office boy walked through one of the studio stages the other day soulfully whistling, "Only God Can Make a Tree." He watched three men working industriously on the stage. Out of planks, wire, nails, and gobs of gummy plaster, these three men were fashioning the twining roots beneath an uncannily lifelike oak already constructed. The boy walked on, but wasn't whistling.

I note that Nikola Tesla, famous inventor, has worked out a new death ray, terrific in its power. Banks of these rays, Tesla claims, would act as a protective wall around a country in time of war, destroying anything that came within their range—a fleet of enemy planes, for instance. Motion picture producers should buy up this idea. A ray machine could be installed at the door of every sound stage, to keep out snoopers that interrupt and spoil a thousand-dollar scene. Movie stars could wear small ray machines to chastise souvenir snatchers who sometimes go so far in their zeal of collecting as to tear the clothes from their screen favorites—compulsory nudism, as t'were. The idea has innumerable possibilities. How much would you charge for one of your machines, Mr. Tesla? I'm bothered by bill-collectors.

This destructive ray idea reminds me of the old gag about the farmer who was much puzzled by the erection, on the road to town, of an imposing-looking, barred structure. After some weeks of speculation, the farmer was fortunate enough, on passing the

building one day, to find a man on the front steps, out for a smoke.

The farmer stopped to inquire what was going on inside. The man on the steps proffered the information that he, with a group of fellow scientists, was searching for a universal solvent.

"Dew tell," said the farmer. "And what might that be?"

"A universal solvent," explained the scientist a bit pompously, "is something that will dissolve everything with which it comes in contact."

"Ye don't say," exclaimed the farmer in an awed tone. "And what be ye a-goin' to keep it in?"

Not that I'm drawing any parallels.

If you are one of those that think John Gilbert is washed up, you should have walked down a certain studio corridor the other day at an opportune moment. Two beautiful, but blasé blonde extra girls were supporting one of the corridor walls when Gilbert passed by. Both gals did a double take as they saw him and one raised a hand to her heart and made motions indicating a suddenly excited condition of that vital organ. When the hearts of satiated extras go pit-pat, think of the little unsophisticated hearts in Oshkosh.

I had to get an insert of a large raw ham, its Sunday go-to-meetin' clothes—all wrapped up in paper and ribbon. When I told the property department what I wanted, they wouldn't order it for me—said that according to the new NRA rules I had to get it through the casting office.

The wardrobe department sent over a fitter.

And the make-up department wanted to work on it.

I think I've been victimized.

"Boy, oh boy, this new director on the lot certainly is pneumatic!"

"I suppose you mean he tires easily."

"Naw. He blows up under pressure."

One of our very best trick men—pardon you, I don't mean Hollywood boys—was photographing a miniature for a certain picture. The director didn't seem to know just what he wanted and was experimenting. First he wanted our friend to make the shot at four times normal speed. Then he wanted a shot at eight times normal and then one at twelve times normal. Finally when he asked for one at twenty times normal, our cinematographer broke loose and said:

"Say, if I speed this camera up any more I'll have to put wind-wings on the aperture plate to keep the pictures from blowing off the film!"

A movie company had been in Africa for several months making a talkie. The director was walking alone through the woods one day and saw two natives seated at the foot of a palm tree, jabbering ex-

citedly at each other and pointing to the top of the tree. The director, upon gazing thereat, was surprised to see two chimpanzees apparently in heated argument. They were jumping up and down on the branches of the tree, screaming and cuffing each other and now and then kicking each other in the shins. The two natives by this time had recognized our director and one of them poked him in the ribs and asked in a jargon that I cannot imitate:

"Mista Directa, whicha one is a camera-man and whicha one da sound man?"

NOTES COLLECTED (In this depression, too!) ON LOCATION WITH THE MILESTONE COMPANY, FILMING "THE CAPTAIN HATES THE SEA" . . . Victor McLaglen wandering around the deck of the "Ruth Alexander," practically iridescent in a bathrobe of blue with orange piping, and a rough cap with tremendous green-and-white checks . . . Milestone shoots all his pictures in continuity, as he claims he gets more realistic work out of his actors that way . . . the weather was terrible for the first six days the company was on the boat, and the boat was costing about \$25,000 for that length of time. Lucky for the weather man, he's the only guy that can't be sued under the California laws . . . they had a water taxi out hunting for sun spots, and as soon as one was sighted, the big ship headed for it. Goofy pastimes . . . Whitey Schafer, the still man, persuading Florence Rice to get up and sit in a big air vent fifteen feet high, for a picture. And she did . . . Allison Skipworth so bored she was fit to be tied. Had been on the boat seven days and they hadn't shot a scene of her. She had nothing left to do but mend her clothes. She'd stayed so much longer than schedule that her wardrobe was running out . . . most of the extras were whipped down to the point of playing cards . . . Wynne Gibson was so bored she nearly wore her hair out having it dressed and redressed . . . Fred Keating detests the sea anyhow, so imagine HIS predicament . . . John Gilbert was also under the weather . . . Walter Catlett and Leon Errol weren't looking so rosy . . . Walter Connolly was the only one who went around with a smile on his face. And he plays the part of the Captain who is supposed to Hate the Sea! Such is life . . . murders are in the offing. The publicity department has sent out requests for substitute titles for "The Captain Hates the Sea." I'm giving fair warning once more—I'll shoot to kill at anyone who tampers with that grand title . . . Vera Steadman, who used to be a star, playing an extra part in this one . . . "Tomorrow? Why, Tomorrow I may be myself with Yesterday's Sev'n Thousands Years!" . . . Omar Khayyam said it, and he must have envisioned the picture business . . . or as Variety puts it, the pic biz . . . Arthur Edson, chief cinematographer, who is called "Little Napoleon" by the crew because of his small stature and dignified mien, nearly met his Waterloo on this picture. Every way he turned almost insurmountable technical problems met him with baleful glance. Try photographing below deck on a steamer sometime. You won't gain any weight. . .

KING CHARNEY GOES UP

Announcement was made at Binghamton, New York, June 29, by R. H. Woodford, Vice-President of the Agfa Ansco Corporation, of the appointment of C. King Charney as distributor of Agfa 35 mm. negative and positive film for the United States.

Mr. Charney has long been identified with the film industry. His widespread experience in the field of motion pictures ably qualifies him to undertake this important assignment.

Agfa products are made in Binghamton in the most

modern film-manufacturing unit in the world, representing the accumulated experience of the industry. It is under the direction of a highly trained staff of technical experts, and was designed and built in such a manner as to provide complete control over every factor which may affect the quality or character of the product. The Agfa Ansco factories comprise 51 distinct buildings, occupying 36 acres of land with ample equipment to produce volume requirements.

Mr. Charney will maintain offices and warehouses in Hollywood and New York.

EVERY MONDAY—

as a special feature of

THE *Hollywood* REPORTER

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SERVICE

MINIATURE CAMERA PHOTOGRAPHY

By AUGUSTUS WOLFMAN

Converting Roll-Film Cameras to Accommodate Cine Film



RECENTLY I received a letter from a reader of this department requesting that I write an article on how to adapt a roll-film miniature camera to accommodate 35 mm. motion picture film, claiming that it would be of interest not only to him, but to many of his fellow miniature camera enthusiasts as well. Before going further let me refer you to an article by Paul R. Harmer in the May *International Photographer*. Actually, when considering general amateur photography, little advantage is gained in the adoption of cine film in preference to roll-film. The market today offers roll-film of all types, including orthochromatic, panchromatic, superspeed, extreme fine-grain, etc. The various types of roll-film available were listed in a former issue, but I shall again include them below together with their general characteristics. The photographer will notice that with perhaps one exception (infra-red sensitive film) a suitable type of roll film is available for the work at hand.

Roll-Films

Agfa Fine-Grain Plenachrome—orthochromatic, extreme fine-grain.

Agfa Superpan—superspeed panchromatic.

Eastman Verichrome—orthochromatic.

Eastman Panatomic—panchromatic, extreme fine-grain.

Eastman Supersensitive Panchromatic—superspeed panchromatic.

Gevaert Orthochromatic—orthochromatic.

Gevaert Superchrome Express—superspeed, orthochromatic, extreme fine-grain.

Perutz Orthochromatic—orthochromatic, extreme fine-grain.

Perutz Persenso—superspeed, orthochromatic, extreme fine-grain.

Voigtlander—superspeed, orthochromatic.

Despite the number of roll-films mentioned above, there is no doubt that there is a greater variety of cine films; and also, the latter when purchased in bulk is more economical.

In converting a roll-film camera to an efficient cine film type it is best to have film magazines in which to load the film, so that the latter can be inserted into the camera in daylight. Roll-film is provided with a protective paper covering which enables it to be inserted into the camera and removed from the latter in daylight. Since 35 mm. film is not packed in this manner, it is necessary to load it into light proof magazines. Either two magazines are used, the film being rolled from one into the other, or one magazine is provided and the mechanism of the camera altered to allow the film to be rolled back into the magazine after it has been completely exposed.

The red windows for counting the exposures would be useless due to the absence of the protective paper covering upon which the exposure guide numbers are printed. Some means of guiding the photographer when rolling the film after each exposure will be necessary. This can be simply provided by placing marks on both the winding knob and the body of the camera around the knob, the number of turns of the knob to bring a fresh portion of film in place for exposure being ascertained.

Cine film has a tendency to buckle and when the winding knob is turned, instead of moving, the film may merely

tighten in the magazine. To eliminate this a sprocket is installed in the camera. The teeth of the sprocket will engage in the perforations along the edges of the cine film and move the latter along.

Few miniature photographers have either the equipment or the mechanical skill with which to effect the changes mentioned above. The expense necessary to have a skilled technician alter a roll film camera to accommodate cine film may equal if not exceed the cost of a cine-film miniature camera, so that even though possible, it doesn't seem advisable to convert a roll-film camera.

However, simple means can be devised whereby motion picture film can be used in a roll-film camera without radically changing the mechanism. It will still remain a roll-film miniature. I have experimented with a Foth Derby camera and found a method of successfully using 35 mm. film in it. First of all it is necessary to mask out the aperture to the size of the motion picture film. Stiff cardboard or thin sheet metal will serve the purpose. After cutting the mask it will be necessary to blacken it so that it will not reflect light. The mask can be secured over the camera aperture with small strips of adhesive tape. Use as little of the tape as is necessary and paste the edges down flat, for if there are any upturned corners the tape is liable to catch onto the film while it is being moved in the camera, resulting in the mask shifting or being entirely ripped off.

The cine film is inserted into the camera in the same manner as roll-film. After you have exposed and developed a roll-film save the black paper covering. Cut a suitably sized strip of cine film and attach it to the black paper in the same manner as the roll film was secured using gummed paper instead of adhesive tape, for the lat-



New York Skyline. Taken with a Leica camera, Agfa Superpan film; 1/200 sec., at f:6.3 with Leica No. 1 filter.

ter is apt to stick to the camera as the film is being moved, and may rip off. At three or four points along the length of the film, strips of gummed paper are applied

to keep the film in the center of the paper covering. The cine film with its attached paper covering is wound on a spool and inserted into the camera. We are now assured that the film will move along evenly when the winding knob is turned; and we can also avail ourselves of the numbers on the paper covering to guide us in winding the film, just as with the regular roll-film. When panchromatic cine film is used, the same precautions in regard to the red windows should be followed as are recommended with the regular supersensitive panchromatic roll-film. In this manner I have made successful exposures on cine film with the Foth Derby camera. Other miniature roll-film cameras can be used in a similar fashion. Cameras which have an automatic film transport instead of the usual red windows make the matter much simpler.

Many miniature camera photographers may have experimented along this line and may have discovered simpler methods of using 35 mm. film in the roll-film camera. We would be glad to hear from such photographers and of the work they have accomplished. It would undoubtedly be of great interest to the readers of this department. Kindly write me in care of *The International Photographer*. Any photographs or diagrams of alterations performed on a roll-film camera to allow it to accommodate 35 mm. cine film will be welcomed. After all, it is through an exchange of ideas and accomplishments that we are able to progress more successfully.

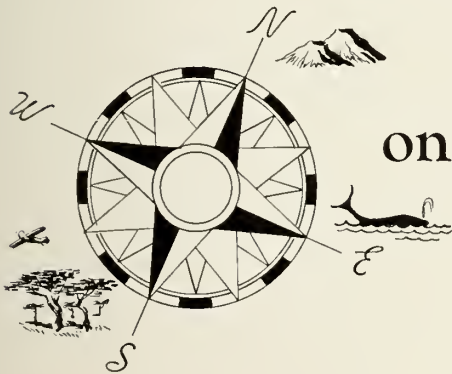
Wratten "A" Filters: Last month it was mentioned that in the case of filters made by cementing colored gelatine between two pieces of glass, strains were set up by the cement so that the filter would not be plane or parallel, except when glasses of unusual thickness were used as in the case of the Wratten A filters. These filters are made from glass known as A glass in contrast to the cheaper or B glass. The term A in this case has reference to the type of glass used and not to the color as the 23-A or tricolor-A filters.

Parallax: The finder and the lens on the camera occupy different positions and therefore the field of view as seen in the finder may be different from the picture formed by the lens. The difference in the fields produced by these two components of the camera does not become apparent until we get closer than about 15 feet to the object. The nearer we are to the latter, the greater is the difference in the picture seen in the finder as compared to that produced by the lens. To compensate for this parallax we must move the center of the subject as seen in the finder slightly towards the lens. If the finder is situated above the lens and we are close to our subject, the latter is first carefully composed in the finder, then the camera is tilted slightly upward to bring the center of the subject downwards towards the bottom of the finder, in this manner compensating for the parallax existing between the lens and the finder. When the finder is situated to one side of the lens, the camera is moved to bring the center towards the side of the finder near the lens. The amount of displacement of the center of the subject necessary is dependent upon the distance of the subject; the nearer it is, the more correction for parallax being necessary.

Some cameras have provisions whereby the parallax can be accurately taken care of, such as the Leica to which can be attached either a universal optical finder, or a direct vision wire type finder, both of which can be adjusted for parallax at close distances. In this case the field seen in the finder will be the same as that formed by the lens. In the case of the Rolleiflex, the separation between the finder lens and the taking lens is so small as to practically eliminate parallax.

Many photographers have been wondering why portions of the subject are cut off in the negative when at the time of exposure the subject was carefully composed in the finder. This happens when the subject is close to the camera and can be eliminated by adjusting it in the

(Turn to Page 24)



The Toughest Spots on Land, in the Air, under Water EYEMO takes them in its stride

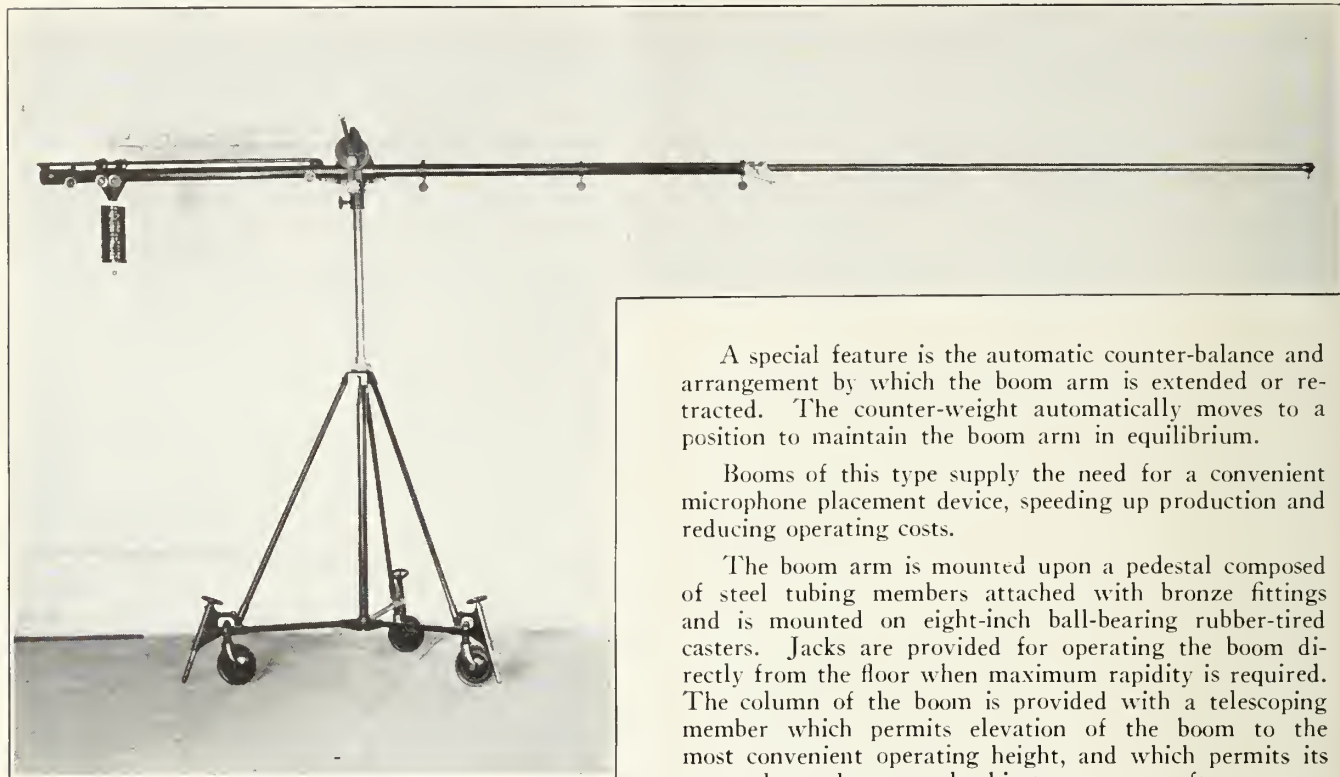
Martin Johnson films animal herds on the African veldt from 1,000 feet up; Arthur C. Pillsbury, naturalist, records the domestic affairs of fishes in the ocean deep; Bernard R. Hubbard, the glacier priest, invades the steaming depths of remote Alaskan craters. The Eyemo 35 mm. hand camera is *there*—catching every movement in these re-

mote and difficult places of the world. Small and compact enough to be carried anywhere, Eyemo may be operated by spring motor, hand crank, or electric motor. Takes 100-foot daylight loading spools, or may be used with 200- or 400-foot external magazines. Seven film speeds, from 4 to 32 or 8 to 48, including sound speed.

BELL & HOWELL COMPANY

1849 Larchmont Ave., Chicago; 11 West 42nd St., New York; 716 North LaBrea Ave., Hollywood; 320 Regent St., London (B & H Co., Ltd.). Established 1907.

AN-EVENT-IN-TEKNIK-TOWNE



Mole-Richardson Automatic Counter Balanced Microphone Boom

THE advent of sound, as in the introduction of super-sensitive film, necessitated drastic changes in motion picture production and for a time caused floundering and non-plussed technicians to cast about in an effort to find adequate means for meeting modern production demands. Consistent with the progression of motion pictures since their inception, it means the conversion and replacement of out-moded and antiquated equipment. The experimental stages and involved costs during this procedure brought lined-brows and gray hairs to producers and technicians alike. The public waited—while makeshift apparatus gradually was replaced by equipment and facilities that “reproduced sound as sound *should* sound.”

As “Inkies” have replaced obsolete modes of stage lighting, meeting the requirements of super-sensitive film, just so does the automatic counter-balance microphone boom occupy a definite and important place on the sound stage. Since the introduction of sound it has established itself as standard and indispensable studio equipment, and through its ability to speed up production has most definitely reduced operating cost. It is the result of intensive study by Mole-Richardson, who, in conjunction with our important studio technicians, sought to build a boom that would answer some of the sound problems with which the studios were confronted.

The counter-balanced microphone boom provides an equipment for the placement of microphones for motion picture sound recording operations, and for coordinating the movement of the microphone with the picture action. By means of equipment of this type microphones may be placed at various heights, the angle of elevation being changed at the will of the operator. The telescoping position of the boom arm may be extended or retracted to a radius of 19' 0" to a radius of 9' 8", and the boom may be rotated about its vertical axis.

A special feature is the automatic counter-balance and arrangement by which the boom arm is extended or retracted. The counter-weight automatically moves to a position to maintain the boom arm in equilibrium.

Booms of this type supply the need for a convenient microphone placement device, speeding up production and reducing operating costs.

The boom arm is mounted upon a pedestal composed of steel tubing members attached with bronze fittings and is mounted on eight-inch ball-bearing rubber-tired casters. Jacks are provided for operating the boom directly from the floor when maximum rapidity is required. The column of the boom is provided with a telescoping member which permits elevation of the boom to the most convenient operating height, and which permits its use under and over such objects as are so often encountered when working in motion picture sets. The telescoping column is crank operated.

Mounted upon the column, but removable from it, is the boom arm of steel tubing into which is telescoped the extendable and retractable member; in designing the controlling features of this boom careful attention has been given to provide silent operation. The telescoping member when extended and retracted is carried on a leather lined ball-bearing carrier roller. The rear portion of the extension tube is supported in a grease packed leather bearing. The automatically moved counterpoise is supported on a carriage which is also mounted on leather-faced ball-bearing rollers. The movement of the extension tube and the automatic counter-balance is controlled by a crank operated at the fulcrum point which may be hand operated as desired, the motion being transmitted to the various moving parts by means of flexible steel aeroplane control cable. Elevation of the boom arm and traversing on the vertical axis is accomplished by a conveniently provided grip-rail.

The boom may be conveniently operated from either a stepladder or from an adjustable platform which is provided at a small extra charge. Carrier rollers are provided for supporting a microphone cable.

When a bullfighter has dispatched his victim, it is customary for him to toss his chapeau to some lovely *senorita*. It is a gesture which the recipient values above any other recognition—this old Spanish custom. In a picture just received in Hollywood, there's a slight variation, as Torreador Lalande, one of the greatest living bullfighters, is seen passing up his hat to Douglas Fairbanks, who stands bare-headed in the front row, behind the ropes of the bullring. The American film star was in Barcelona recently, making exteriors for his new picture, “The Private Life of Don Juan”, for London Film Productions, under the direction of Alexander Korda, who produced “The Private Life of Henry VIII” and “Catherine the Great.”

Brilliant PERFORMANCE

EVERY fine performance on the screen depends upon certain earlier performances... not by the cast alone, but by the film in the camera. Because of the dependability and artistic opportunity it affords... because of its unfailingly brilliant performance... most cameramen and producers prefer Eastman Super-Sensitive Panchromatic Negative with gray backing. Eastman Kodak Company, Rochester, New York. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-Sensitive*
Panchromatic Negative

"The cameraman today is a dramatist at heart. His brush is a camera, but he's nevertheless an artist."

THE CAM

Vol. I.

MONTHLY NEWS OF PRODUCTION

COLUMBIA CLIPS

By BOB TOBEY

"AMONG THE MISSING." Directed by AL ROGELL. Joe August drew this photographic assignment. Dave Ragan took care of pointing the camera in the right direction, while Marcel Grand and Jack Russell handled the lens stops and calibrations. Billy Fraker toted around the snapshot equipment. Jimmy Punter was the gaffer, Ed Blaisdell the grip, Jerry Franklin Wright dished out the scene numbers, and Glenn Rominger raked in the sound waves, with the assistance of Earl Snyder as mike man.

Completed about two weeks ago, the pictures stars Dick Cromwell and Henrietta Crossman, and gives Billie Seward her first leading role. It was pretty nearly her last leading role, too, as she and Dick had to eat so many doughnuts for sequences in the picture that they both had tummy-aches. They finally took to making hollow doughnuts for Billie, so that she could go on with her scenes for a while longer. What suffering one must suffer to become an actress! One must give all for art, so that there will be art for all. If the censors don't ruin it.

"THE CAPTAIN HATES THE SEA." Directed by LEWIS MILESTONE. Chief Cinematographer at the start was Arthur Edeson, but the terrific strain under which he had to work on location on board the "Ruth Alexander" proved too much for him, and half way through the picture he asked to be relieved rather than suffer a nervous breakdown. Joe August relieved him. The entire crew worked to the point of exhaustion during the four weeks on the boat sequences, shooting all day in sunlight, and then working by artificial light during the evening, with 6:30 calls to which to look forward each morning. Not alone did the Captain hate the sea! F. M. Browne as second cameraman and Al Keller as assistant remained through the picture. Rod Tormie twiddled the focus-changing devices for the first half of the picture, but was replaced by Marcel Grand when August took over the helm. Whitey Schafer exhausted the possibilities of the ship for stills. Homer Plannette and Jim Punter were gaffers. Nate Watt was assistant director, with Tommy Flood as second assistant. George Cooper was Big-Ears. Mercy Weirter handled the script, H. B. Hanks and Ed Blaisdell were the hammer-and-nails fellows, and Norbert Miles was busy keeping up Max Factor's reputation and his own sylph-like figure.

The cast boasts (and well may it boast) of the following: Victor McLaglen, Walter Connolly, Allison Skipworth, Wynne Gibson, Fred Keating, Leon Errol, Walter Catlett, Florence Rice, Jack Gilbert, and The Three Stooges. The role of the Captain who began to follow the sea by accident, and hates everything about it, is played by Connolly; and although the title roles was actually one of the lesser parts in the script, my Shovel Boys inform me that Walter is making the part so outstanding and laugh-provoking that he bids fair to steal the picture. Connolly is a hard worker and a good trouper. I saw him on the set the other day, making a scene in which he had to take alternate drinks of soup and wine. Half way through the scene he swallowed some soup the wrong way, but strangled his cough and went on, making a noble effort to finish the scene without a breakdown. He got red in the face, however, and finally had to quit, gasping for breath, when it came time to take a swallow of wine.

"HOLLYWOOD CINDERELLA." Directed by ARCHIE GOTTLE. You figure out who was Chief Cinematographer on this short. Henry Freulich started it. The second day of production had to leave to take over another picture, and Victor Scheurich was assigned. That lasted for one day, and Vic had to return to the "BROADWAY BILL" set to photograph with Walker. Joe August next took the tiller, but had to leave the next day to replace Edeson on "THE CAPTAIN HATES THE SEA." Al Siegler then took over the situation. That's all, folks, because it was only a four-day schedule. Fred Kaifer panned and tilted his way through the entire picture, and Jack Andersen and Walter Lackey did the assisting. Arthur Jarrett, Inez Courtney, and Gene Sheldon were in the cast.

EXPLORATION PICTURES CORP.

"BRIDES OF SULU." Director, John Nelson; author, James Ormont; screenplay, James J. Gilhert; first cameraman, Harry W. Anderson.

Cast: Adeline Moreno, Eduardo de Castro, Gregoria Ticman, Armanda Magbitang, Datu Mandi, Felisa Fernandez.

"The photography by Harry W. Anderson is stunning."—Hollywood Reporter.

WARNER BROS. - FIRST NATIONAL

"SIX DAY BIKE RIDER." Director, Lloyd Bacon; original screenplay, Earl Baldwin; first cameraman, Warren Lynch; supervisor, Sam Bischoff.

Cast: Joe E. Brown, Maxine Doyle, Frank McHugh, Gordon Westcott, Arthur Aylesworth, Lottie Williams, Lloyd Neal, Dorothy Christy, Tammany Young, Charles Sellon, Tom Wilson, Harry Seymour.

"PERFECT WEEK-END." Director, Ray Enright; story, Frederick Haxlitt Brennan; screenplay, Warren Duff and Seton I. Miller; first cameraman, William Rees; supervisor, Sam Bischoff.

"I SELL ANYTHING." Director, Robert Florey; story, Albert J. Cohen and Robert T. Shannon; screenplay, Brown Holmes and Sidney Sutherland; first cameraman, Sid Hickox; supervisor, Sam Bischoff.

Cast: Pat O'Brien, Ann Dvorak, Claire Dodd, Roscoe Karns, Russell Hopton, Hobart Cavanaugh, Harry Tyler, Gus Shy, Leonard Carey, Sam Godfrey.

"JUST OUT OF COLLEGE." Director, Alfred E. Green; story, Robert Lee Johnson; screenplay, Eugene Solow and Robert Lee Johnson; first cameraman, James Van Trees; supervisor, Edward Chodorov.

Cast: Franchot Tone, Jean Muir, Ann Dvorak, Margaret Lindsay, Ross Alexander, Nick Foran, Henry O'Neil, John Eldredge, Merwin Light.

FOX STUDIOS

Hal Mohr has been assigned to "CHARLIE CHAN IN LONDON." His assistants are John Schmitz and Bob Surtees. The picture will be produced at the Fox Western Avenue Studios.

"ESCAPADE." Director, Ernst L. Frank; original screenplay, William Hurlbut; first cameraman, Norbert Brodine.

Cast: Binnie Barnes, Neil Hamilton, Paul Cavanaugh, Grant Mitchell, Ferdinand Gottschalk, Doris Lloyd, Henry Kolker, Eugene Pallette, Dick Winslow.

MONOGRAM

"KING KELLY OF THE U. S. A." Supervisor, George Bertholon; original story, George Bertholon and Howard Higgins; screenplay, Leonard Fields and David Silverstein; director, Leonard Fields; assistant, Bill Reinecke; first cameraman, Robert Planck; operative cameraman, Reggie Lanning; assistant, Russell Harlan; stills, Oliver Sigurdson; recording engineer, Ralph Shugart; film editor, Carl Pierson; art director, E. R. Hickson; chief electrician, Tex Cox; chief grip, Tex Hayes; chief prop, Bob Landers.

Cast: Guy Robertson, Irene Ware, Edgar Kennedy, Franklyn Pangborn, Otis Harlan, Ferdinand Gottschalk, Joyce Compton, Bodil Rosing, Lorin Baker.

Talking picture entertainment is a regular feature in the sub-zero fastness of Admiral Byrd's Little America headquarters in Antarctica. Carl Peterson, Paramount News man of the Paramount Antarctica Bureau writes:

"We have run approximately fifteen shows and the equipment has worked perfectly, both sound and pictures. It has been so much pleasure for the members to have a show every Wednesday and Saturday and when we get all set on the barrier we will again continue the shows."

The expedition is outfitted with standard Western Electric equipment secured from ERPI.

Paul Eagler has finished his assignment at Reliance, for Edward Small. Paul had charge of process background work on the "Count of Monte Cristo" and "Trans-Atlantic Show Boat."

MOST INTERESTING STILL



This rare and priceless document of motion picture history. Company made at Albuquerque, New Mexico, en route to the are: Billy Bitzer (left), Walter Long, Donald Crisp, John J. Stuart Blackton, extreme right. Photographed by am

MISCELLANEOUS

Ruddy Geraus, that genial manager of the Camera Supply Company, has been spending a little time in the hospital, undergoing a operation for appendicitis. Ruddy's many friends will be glad to learn that he is getting along well and indications are that he will be back at his post by the time this book comes to the press.

Charles P. Boyle is spending a few weeks in Chicago, behind the cameras, for Jack Benny Comedies (Universal release). E. T. Farnham is pinch-hitting for him over at the Camera Supply Company. Are you tellin' 'em, that's about how we gotta have blankets in Clornia even in mid-summer?

Gordon Jennings, head of the special effects department at Paramount, has returned from a pictorial adventure to Rouge River and point north. If you have a fish story, get it ready for the next time you see Gordon.

Our old friends, Roman Freulich and Ki Gray have been much in the limelight, according to newspaper and magazine reviews, for the splendid work in "PRISONER." Freulich directed and Gray was cameraman. The Filmarte theatre which shows so many good and unusual pictures had first showing on this. Congratulations to Roman and King!

Warner Brothers - First National - "OUR WIFE." "William Rees' photography is a standing asset to the picture."

OTION PICTURE HISTORY



request. It is a shot of the original D. W. Griffith of the people cannot be identified, but the headliners Gish, Henry Walthall, Bobbie Harron, Fay Tincher, Jack Dillon, James Kirkwood, Flora Finch, Commodore. Published by request.

INDIA IS BECOMING HOLLYWOOD CAMERA MINDED

India is becoming conscious of the fact that skilled technicians and cameramen plus modern equipment are of the greatest importance towards the success of motion pictures, according to Dilip Gupta, cameraman from the New Theatres, Ltd., studios at Tollygunge, Calcutta, India.

Mr. Gupta has spent over a year at the various studios in New York and Hollywood studying and learning the latest developments in the technical fields—especially those of photographic processes and laboratory work.

He is leaving for Bombay, India, and after a short survey of film conditions there will continue on to Calcutta where he will go into immediate production.

Mr. Gupta says he intends to greatly increase the photographic quality of the Indian films by applying some of the Hollywood technique which he has learned during his stay here.

Ellis Dungan, Hollywood cameraman, and Michael Omaliev, laboratory man, are also leaving for Bombay, India, where they are to take charge of the photography and laboratory work on the productions for Munnay Tandon, producer-director who is at present connected with the Imperial Film Co. Studios of Bombay.

Mr. Tandon is well known in Hollywood, having spent several years here acting in the capacity of technical adviser and director, and often taking "extra" roles in many films of an Oriental character. Between productions Tandon attended the University of Southern California where he did quite a lot of research and study on the fundamental and psychological aspects of the motion picture. He also wrote and directed two productions while on the campus.

Mr. Dungan will introduce to the studios of India the new Akers Featherweight professional 35 mm. Motion Picture Camera which he will carry with full equipment. He intends to use it as a supplementary camera on production besides making travelogues (for American release), and using it on several photographic expeditions into the remote beauty spots of the country before returning to Hollywood.

RKO RADIO

"THE FOUNTAIN." Producer, Pandro S. Berman; authors, Charles Morgan and Jane Murnin; screenplay, Jane Murnin and Samuel Hoffenstein; director, John Cromwell; first cameraman, Henry Gerrard; operative cameraman, Bob De Grasse; assistant, George Diskant; stills, Alex. Kahle; recording engineer, Clem Portman. Cast: Ann Harding, Brian Aherne, Violet Kemble Cooper, Paul Lukas, Jean Hersholt, Ralph Forbes, Sara Haden.

"AGE OF INNOCENCE." Producer, Pandro S. Berman; author, Edith Wharton; screenplay, Sarah Y. Mason and Victor Heerman; director, Philip Moeller; first cameraman, James Van Trees; operative cameraman, Louis Jennings; assistant, James Van Trees, Jr.; stills, John Michle; recording engineer, John Cass.

Cast: Irene Dunn, John Boles, Julie Hayden, Laura Hope Crews, Helen Westley, Lionel Atwill.

"THE GAY DIVORCE." Producer, Pandro S. Berman; author, Dwight Taylor; screenplay, George Marion, Jr. and Dorothy Yost; director, Mark Sandrich; first cameraman, David Abel; operative cameraman, Joseph Biroc; assistant, Willard Barth; stills, Fred Hendrickson.

Cast: Fred Astaire, Ginger Rogers, Alice Brady, Edward Everett Horton, Erice Blore, Eric Rhodes.

LONGSHOTS

Joe Walker had practically the entire Columbia camera department at his beck and call on the location trip to Tanforan where he photographed sequences of the Frank Capra production, "BROADWAY BILL." Among the cinematographic gentlemen who were up at one time or another were Andre Barlatier, Jack Young, Al Siegler, Vic Scheurich, George Kelley, Jack Andersen, Jim Goss, Fred Dawson, Enzo Martinelli, Jack Russell, Marcel Grand, Eddie Kearns, Walter Lackey, Irving Lippman and Marty Crail. . . . It was an eventful location trip, too. . . . The company got a taste of what San Francisco was undergoing because of the strike, when the hotel where they were staying posted notices that no food would be served except to those living in the hotel, because of impending food shortage. The company left just in time to escape even more serious consequences. . . . Jack Andersen fell down on his job for the first time. He walked right off a six-foot parallel with a camera on his shoulder, staggered a bit, and continued on. Perhaps I should have said he didn't fall down on his job. . . . Jim Goss claims he finally got Joe Walker down to two insults a day. . . . Marty Crail says he had his darkroom set up in one of the stables. Just a dog in a manger—high-ho. . . .

Ted Tetzlaff returns to his old stamping-ground, after an absence of many moons, to take charge of photographing lovely Carole Lombard in "ORCHIDS AND ONIONS." Dave Burton directing. The picture will be already in production by the time this is dry. Ted will find much hospitality on his return, as all his old friends are pleased by the news—especially Jack Andersen, who will again be Ted's assistant. Jack is the happiest man on the lot, and has spent hours polishing up the old maestro's camera and equipment. . . . Andre Barlatier, the Old Background Snatcher, went with Roy Davidson on board the Milestone boat to spend two days shooting b. g.'s for "The Capt. H8s the C." ('Scuse, please—we must have our variety.) Davidson returned to the studio, but Andre got a wireless telling him to stay on board, as Leon Barsha was coming out to shoot inserts. So Andre was tied up on board for a few days more. Then Lusty, in charge of Columbia's trailers, came out to make a trailer. By that time Milestone had seen Andre's rushes and liked them so much that he made Andre stay several days longer. He began to think he was shanghaied. Reinforcements of laundry arrived in the nick of time. . . . Enzo Martinelli, Andre's assistant, wasn't so fond of the trip. He says running up and down hills making horse-operas is a pipe compared to shining up masts and down holds. The distances on shipboard may be short, but too many of them are perpendicular. . . . Reports come in that George Kelley's work shooting second camera was excellent. . . . Character Note: Watch Emil Oster sometime when he is talking on the telephone. He nods at the transmitter instead of saying yes or no. . . . Jack Russell and his new wife have taken unto themselves a new home in the hills and a new Boston bull pup bight "Wimpy." . . . Columbia has just built a new electrical department, new paint shop, and new garage, so the camera department has high hopes. . . . Just received a Censorship Elimination Sheet on the latest Screen Snapshots Newsreel. At a swimming pool Esther Ralston did a cute scene in which she gave an imitation of Mae West going off a diving board. The censors deleted it, because Esther giggled a little. The situation would be funny, if it weren't so stupid. . . . And by the way, my life is now complete; I've seen Mae West. I was beginning to believe her a myth. (Now please! No puns!)—BOB TOBEY.

UNITED ARTISTS STUDIOS

"WE LIVE AGAIN." Director, Robert Mamoulian; based on the novel by Leo Tolstoy; screenplay, Leonard Praskins; first cameraman, Gregory Toland.

Cast: Anna Sten, Fredric March, Gwendolin Logan, C. Audrey Smith, Jessie Ralph, Jane Baxter, Ethel Griffies, Sam Jaffe.

"KID MILLIONS." Director, Roy Del Ruth; original screenplay, Nunnally Johnson, Nat Perrin and Arthur Sheekman; dance director, Seymour Felix; music, Walter Donaldson and Gus Kahn; first cameraman, Ray June.

B. B. Ray recently has made nine Western features and shorts, featuring Tom Tyler, Jack Perrin and Ben Corbett. Henry Kruse was first cameraman and Joe Lykins, assistant. Ben Ray is now in New York negotiating for further pictures. Reliable Pictures, Inc., is the main company.

UNIVERSAL STUDIOS

"OF GAB." Director, Karl Freund; Jerry Wald and Philip G. Epstein; screenplay, Lou Breslow; screenplay, Rian James; cameraman, Harold Wenstrom; associate producer, James.

Edmund Lowe, Gloria Stuart, Alice Victor Moore, Phil Baker, Ruth Etting, Austin, Gus Arnheim and Orchestra, The Sisters, The Beal Street Boys.

"ATION OF LIFE." Director, John M. on the novel by Fannie Hurst; screenplay, William Hurlbut; additional dialogue, Sarah and Victor Heerman; first cameraman, Gerstad.

Claudette Colbert, Rochelle Hudson, Leavers, Juanita Quigley, Marilyn Knowl-Sparks, Siebe Hendricks, Dorothy Black, Washington.

"E UP AND DREAM." Director, Kurt; original screenplay, John Meehan, Jr.; uss Columbo, Jackie Stern, Bernie Gross-esse Valentine; first cameraman, Charles

Russ Columbo, June Knight, Roger Pryor, vine, Henry Armetta, Catherine Douchet, ordon, Spencer Charteris.

"CY RHODES." Director, Al Rayboch; W. C. Tuttle; screenplay, Edward Clyde Jr.; first cameraman, Ted McCord. Buck Jones, Sheila Terry, Walter Mil-Sley Fields, Silver, Akf P. James, Jack

MOTION PICTURE SOUND RECORDING

By CHARLES FELSTEAD, *Associate Editor*

Chapter XI



THE two preceding chapters discussed audio-frequency amplification as it is applied to motion picture sound recording. The first of those chapters dealt with the theoretical phases of vacuum tube operation and audio amplification; while the chapter last month described the amplifying equipment used in the direct recording circuit. The material presented here deals with the monitoring amplifier and associated equipment and the methods of direct and photo-electric cell monitoring.

The chapter last month mentioned that the sixth branch from the bridging bus leads to the monitoring amplifier and through it to the monitoring horns. It is true that for normal monitoring the monitoring amplifier is connected directly to the bridging bus in that manner; but there is a relay (No. 1) in the input circuit of this amplifier that permits it to be switched to either of the photo-electric cell amplifiers in the film recording machines when it is desired to check if the sound is reaching the film safely. The position of this relay is apparent in Figure 1.

When the relay is not actuated by the passage of a current through its winding, the monitoring amplifier is connected directly to the bridging bus, and the circuit is said to be arranged for *direct* monitoring. That is the normal line-up for monitoring during recording and rehearsals; so we will discuss that arrangement first.

The Monitoring Circuit

The sixth branch from the bridging bus connects directly to a variable attenuator of the T-type. This attenuation network is identical with the recording machine attenuators described last month. Like them, it has a constant input and output impedance of 500 ohms; and it is variable in ten steps of two decibels each, thus providing a maximum loss of twenty decibels. (Last month it was stated in error that these attenuators possessed twenty steps of one decibel each.) This monitoring attenuator is mounted on a panel in the center bay of the main amplifying system of the channel.

The attenuator is inserted in the circuit at this point to permit balancing of the three monitoring circuits. Smaller attenuators, which will be discussed in a later chapter, are connected to the outputs of the two photo-electric cell amplifiers. By regulating these three attenuators, the transmission engineer is enabled to obtain such a perfect balance of the *direct* and the two *photo-electric cell* (PEC) monitoring paths that the monitor man is not aware of a change in the sound volume in the monitor horns when he switches from one to the other of the monitoring circuits.

The only noticeable difference when the switch is made from direct monitoring is the mushiness of the sound from the photo-electric cell amplifiers, that distortion of the sound quality being produced by the modulated light beam passing through the emulsion and the celluloid base of the motion picture film in the recording machine. Since the PEC monitoring is used only for a moment during each sound "take" to verify that the speech current is reaching the light valve and operating it, this distortion of sound quality is not objectionable.

The Monitoring Amplifier

After leaving the direct monitoring attenuator, the circuit passes through the contacts of the No. 1 relay to the input of the monitoring amplifier. Two separate amplifiers that closely resemble the amplifiers in the recording circuit are combined to form this monitoring amplifier. The first of these amplifiers is a three-stage affair of exactly the same type as the main recording amplifier, the only variation being that the primary windings of its input transformer are connected to provide a 500-ohm input impedance that matches the impedance of the bridging bus and the monitoring attenuator. It will be remembered that the main recording amplifier has a 200-ohm input impedance.

The output of this first monitoring amplifier feeds directly into the input of a single-stage push-pull amplifier that is a duplicate of the bridging amplifiers. But this second amplifier has an input impedance that matches the output impedance of the main monitoring amplifier, instead of having the high input impedance that characterizes the bridging amplifiers. Otherwise there is no difference between the two amplifiers.

This push-pull power amplifier is not equipped with a gain control, all regulation of the level of the speech current at its output being provided by the twenty-two step gain control on the main monitoring amplifier. The tubes used in these two amplifiers that form the monitoring amplifier are the same as those used in the equivalent recording amplifiers.

Alternative Main Amplifiers

It must be mentioned at this point that there is somewhat of a variation in the type of main recording amplifier and first monitoring amplifier used in different installations. There is an alternative type of amplifier that is frequently substituted for the three-stage amplifier previously described. This alternative amplifier has only two stages of amplification. The first tube is of the voltage amplifier type; and the second tube is of the power amplifier type, but it is operated at lower power output, just as is the second tube in the three-stage amplifier. These two tubes are the same type as the tubes used in the three-stage amplifier; and the circuit employed closely resembles the circuit of the first two stages of the larger amplifier.

The input and output coupling devices of this two-stage amplifier are transformers; and coupling between the tubes is provided by impedance coupling. A tapped potentiometer in the grid circuit of the second tube furnishes a means of regulating the amount of gain in the amplifier. Tap switches of four and six points each connected to this potentiometer provide rough and fine regulation of gain. A filament rheostat and jacks that permit measurement of the filament and plate current drawn by the tubes are included.

Substitution of Amplifiers

A single one of these two-stage amplifiers is frequently used in place of the three-stage amplifier as the main recording amplifier. It provides ample gain for the normal recording installation; and its tubes are not

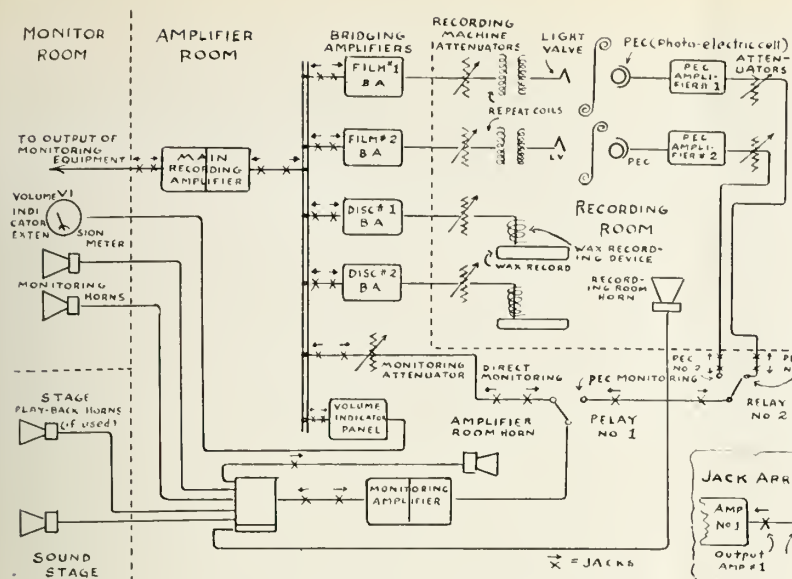


Fig. 1. Block Schematic Diagram of Recording Channel.

as prone to generate disturbing noises in the recording system as the result of mechanical shock and vibration as are the tubes in the larger amplifier. The higher gain in the three-stage amplifier is what makes it so sensitive to the mechanical vibration of the elements in its tubes, particularly in the voltage amplifier tube.

When amplifiers of this two-stage type are used in the monitoring circuit, one of them is connected directly in place of the first monitoring amplifier, and another one is connected so that it is in the photo-electric cell monitoring circuit. The arrangement is such that when relay No. 1 is in its normal position (i. e., not energized) the direct monitoring circuit from the bridging bus passes through one of the two-stage amplifiers and the push-pull power amplifier. When the relay is energized, the PEC monitoring circuit from the output of one of the photo-electric cell amplifiers passes through both of the two-stage amplifiers and then through the power amplifiers. In this way, the second two-stage amplifiers make up for the much lower electrical level at the output of the PEC amplifiers. The arrangement is illustrated in Figure 2.

The Horn Panel

The output impedance of the monitoring amplifier is 500 ohms; and in order to match that impedance to the sixteen-ohm horn units, an impedance-matching transformer mounted in a horn panel is provided. This panel is equipped with seven tap switches, each having eleven contacts, which serve to regulate the volume of sound generated by each of the loud speakers in the installation. A key switch just below each tap switch permits any one of the horn units to be switched on or off.

In the normal single channel recording system, only four of the switches are needed to control the horns. Two of the four horns are mounted in the monitor room. They were described in the chapter on monitoring equipment. The other two switches control small horns that are installed in the amplifier and recording rooms. The same type of electrodynamic-coil horn unit is used in all cases; the difference is in the length (from diaphragm to opening of bell) of the exponential horn attached to the unit.

Six horns are employed in the channel that is used for "dubbing," the additional two horns being mounted in the dubbing projection room and the dubbing room. Occasionally, one or two horns of the large type are also used on the sound stage for making "play backs." This is done most frequently when music is being recorded. The play back is made from one of the wax

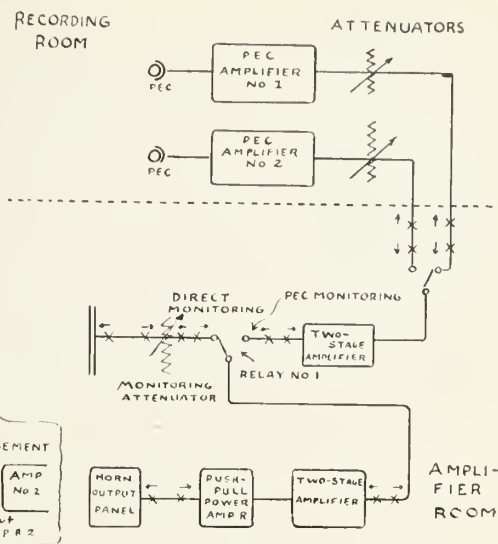


Fig. 2. Alternative Monitoring Amplifier Arrangement.

records—which damages the record so that it is worthless for processing—to provide the musical director with an opportunity to check the quality of the music and the recording.

The volume of sound from each individual horn is adjusted by the proper tap switch to suit the comfort of the person working in the room in which the horn is installed. The large horns in the monitor theatre are set at the sound level that the monitor man on duty has found to be most satisfactory for his hearing. But in order that too low an impedance will not be presented to the output of the monitoring amplifier, a condition which would cause distortion and loss of sound quality, the combined impedances of all the horns connected to the horn panel should be made equal to the impedance that would exist if only one horn were used with its switch turned up to full volume.

Horn Impedance Matching

When a tap switch is on the tap marked zero, it provides full sound volume for the horn associated with that switch. The tap marked twenty disconnects the horn from the circuit in so far as impedance matching is concerned, but the horn will still produce sufficient sound volume for a small room. Using the figures given in the following table, the total indices of the switch settings for all the horns that are in use should add up to 1.00 (within plus or minus 0.10) to preserve the proper impedance match.

Tap Switch Setting	Impedance Matching Index
0	1.00
2	0.63
4	0.40
6	0.25
8	0.16
10	0.10
12	0.06
14	0.04
16	0.03
18	0.02
20	0.00

From an examination of the table it will be evident that one horn with the tap switch set at zero will provide a perfect impedance match. Since the sum of the indices should be between 0.90 and 1.10, if two horns were used one could be set on point two and the other on point four, making the total 1.03. If several other

(Turn to Page 25)



COMPOSITION IN PRACTICE

By WALTER BLUEMEL

PART I.

MUCH has been written about pictorial composition. The art departments of all public libraries are full of books on the subject. Henry Poore, Jay Hambidge, Arthur Hammond, E. C. Lutz, Arthur Dow, Henry Baily, and many other authorities have written on it at length. Photographic magazines contain many articles on this interesting subject which, if gathered together, would make a very valuable volume for every amateur. The amateur has no excuse for lack of knowledge and application of the principles of composition—of balance, transition, opposition, repetition, emphasis, subordination, harmony, rhythm, dynamic symmetry, line, tone, and so on. Each plays an important part in photographic composition.

It is not my intention to repeat these principles, for the amateur is concerned not so much with a theoretical discussion of them as with practical hints as to their application. I believe that artists are born, not made, and if the amateur or professional cinematographer does not have an inborn sense of good composition (which education will, naturally, bring out) there is little chance for him to become a great pictorial artist. He may follow all the principles of composition outlined by the best art authorities, but the chances are that his pictures will lack naturalness and feeling and be unimpressive. Art is not a subject that can be treated by rules alone, like commercial and mechanical design, but requires a certain amount of inspiration and a natural sense of composition. Eugene Cour, in his article on "Cinematic Composition" in the June and July, 1933, issues of the *International Photographer*, states that "Rules may be said to be the guide of the workmen and the discipline of genius." Although many cameramen have become artists without having studied the theories of composition, it is a great advantage to know them—to understand why one composition is good and another is bad and be able to point out the good and bad points.

Composition is based on natural laws, and everyone has, to a greater or less degree, a natural sense of composition. This is evidenced in architectural design, in the arrangement of furniture, in landscaping, and in many other common ways. Few people are conscious of it, yet when something is out of place and makes a bad composition they immediately feel that something is wrong and seek to correct it. Good composition, therefore, is very important to the success of a picture, whether it have a plot or be merely a scenic picture. It makes a picture pleasing to look at and holds the attention; a lack of it is immediately felt, even though not consciously.

Composition must not be too obvious or it will draw attention to it and detract from the story. This is not always true of purely scenic pictures, for they depend on striking pictorial effects for their interest, but in other pictures art is art only when it is not obviously so,—when it contributes to the whole effect without attracting attention to itself. Its purpose is to present the subject at its best advantage. The successful cinematographer is one who can strike a happy medium—one who knows when to emphasize the dramatic, when the subject matter, and when the purely pictorial and who can make his compositions natural, effective, and in keeping with the mood

of the scene. The purpose of this article is to suggest ways in which this is done.

The accompanying still from the Fox picture "Serenade" is a good example of natural composition. The center of interest lies at the point of strongest contrast, in this case the shepherd, who, by the direction of his gaze and his flute, points to the secondary point of interest, the herd of sheep. Both stand out against the light, plain background of the field, and balance each other so that one side of the picture does not outweigh the other. If the shepherd, with his dark clothes, had been placed against the dark tree trunk he would not stand out nearly as well. The tree in the foreground serves the double purpose of framing the scene and of breaking up the blank expanse of the sky. Without it the light and shade would not be as well distributed, and on the screen the white sky would produce a glare which would make the picture harder to look at. Too much sky in a picture is not good, unless it is properly filtered, has interesting cloud formations, or is used for special dramatic effect, such as to suggest the heat and glare of the desert by showing a vast expanse of bright sky. A good rule to follow, also, is never to divide the screen in two with the horizon line, always placing it above or below the center, depending on whether the greatest interest is in the sky or in the land. The same applies in the vertical plane. Except in close shots the composition is usually more interesting when the dividing line and center of interest are not in the center of the picture, as in the illustration. The center of interest, however, should in that case attract the attention to-



No. 1—A sample of good composition. A scene from the Fox production, "Serenade"; tentative title.

No. 2—A low angle shot. Cinematographer Dan Clarke shooting "Smoky", in Will James big hoss picture.

No. 3—Sample of a crazy angle shot. Mickey Marigold of the M-G-M staff makes a still of Robert Montgomery.

ward the center of the picture, otherwise the eyes will tend to travel out of the picture.

Two things must be kept in mind—the motion picture is essentially a pictorial medium, and it must move. Be-

cause it is a pictorial medium it naturally embodies all the principles of pictorial composition, and because it must move, movement must be part of the composition. It is just as important that moving objects in the picture make a pleasing composition with the rest of the picture as it is to have the rest of the picture well composed. The moving object is generally the center of interest in the picture because of the natural instinct of the eye to be attracted to a movement. No matter how small the moving object may be on the screen the eye will single it out and follow it, even though there may be larger and more interesting stationary objects in the picture. Any movement on the part of the sheep in the scene from "Serenade" would immediately attract attention from the shepherd, even though he is closer, larger, and more interesting. Unimportant movements should therefore be avoided, while important ones should be enhanced by compositions which will aid the eye to follow them.

The line that moving objects follow should be governed by the same rule of composition that governs stationary lines. Movements, like lines, create psychological effects depending on their direction and type. Horizontal movements are inclined to be more calm and quiet than diagonal movements, which in themselves are dynamic and suggest power, energy, and action. Commercial artists are aware of this fact when they show speeding automobiles or trains in a diagonal position in advertisements. A diagonally ascending or descending airplane seems to possess much more power than one flying on a horizontal plane. Violent actions, such as in a battle, are best shown with diagonal compositions. Ascending vertical movements, as fireworks, balloons, smoke, etc., express exaltation, freedom, aspiration, and courage, while descending motions express heaviness, danger, and crushing power, as a falling airplane, an avalanche, or any falling body. Curved movements are the most graceful, while zig-zag motion, like a lightning flash, suggests violence, treachery, unrest, and uncertainty. Pendulum motion produces a monotonous effect, like the pacing of a caged animal, and circular motion is cheerful, and suggestive of mechanical energy. It is the duty of the cameraman to choose his angle so that the line of movement in the scene photographed accentuates the feeling the movement is to create. Too many amateurs disregard this, with the result that the movements in their pictures lack interest and contradict each other. Each movement should be interesting in itself, yet must contribute to the whole effect of the picture.

The panning and moving camera also plays an important part in composition, but it requires considerable skill to maintain composition while the camera is moving. Jos-

eph von Sternberg's pictures are excellent examples of composition (for he is essentially a pictorial director) maintained throughout a complicated camera movement, as in some of the crane and trucking shots of "The Scarlet Empress." Charles Lang and Lee Garmes, both of whom received awards for outstanding cinematography, also make excellent use of the moving camera, as witness the former's "Farewell to Arms," and the latter's "Shanghai Express" and "Zoo in Budapest," as well as more recent pictures by the same men. Most of the outstanding professional pictures contain examples of the effective use of moving and panning camera, and the amateur can learn more from studying them than he could learn from any explanation of them. As I stated in a previous article, the professional picture should be the textbook for the amateur who wishes to make more than just common snapshots.

I do not advocate the use of panning or moving camera to the amateur unless it is thoroughly understood and used with discretion and skill. Camera movement can easily be overdone. Most amateurs when photographing a landscape which has little or no movement try to create movement by panning the camera. They think, perhaps, that this will make the scene more interesting. Motion pictures should move, yes, but not without reason. Like everything else, every movement, whether it be of the material or of the camera, should have a purpose in the picture. If panning is continued throughout several scenes without any purpose other than to create movement or to take in as much territory as possible it becomes so monotonous and irritating (especially when, as is often the case, the panning is too fast and jerky) that it makes the spectator want to scream. To avoid monotony of camera movement any angle successive shots should be varied as much as is reasonable.

The chief disadvantage of panning, however, is that it usually kills all possibilities of good composition. Landscapes are much better when taken with a stationary camera, for then the composition can be carefully chosen, while it is difficult to maintain good composition throughout a panning shot. Furthermore, panning does not permit the eye to rest long enough on one spot to leave a sufficient impression, and the whole scene is sometimes lost. Panning shots should be used only to follow some action or to show the relation of one object or view to another, or at times when the whole scene desired cannot be obtained in a stationary shot. A series of stationary scenes which are properly composed will give a much more pleasing effect than a panning scene, and, when properly cut, will suggest just as much movement, as, for example, in the quick rhythmical cutting of stationary scenes in Rus-



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sian pictures to produce a feeling of excitement. The same applies to trucking shots (where the camera is mounted on wheels and moves), but since in this case the movement usually is not so fast and does not cover such a large territory, it is not as objectionable if used wisely.

The angle from which a picture is taken naturally has an important bearing on its composition. A picture which may be ugly and uninteresting from one angle may produce a striking composition from another. Art is not what you photograph, but how you photograph it. The most commonplace subjects can be made beautiful and interesting if photographed from the right angle and properly arranged and lighted, as any photographic exhibit will bear out. The most effective camera angle will at once suggest itself to the camera artist—there are few rules governing its choice, and those essentially concerning the psychological effect, or mood, created by the angle.

Low angle shots invariably make the subject loom above in a threatening manner—they suggest power. Thus, when a man is to be pictured as a giant, a man of power, or a tyrant, a low angle setup is best. The Russians use this effect very excellently in their propaganda films, for their story material is especially suited to radical camera angles. Many American directors and cameramen also employ this angle in mystery, crime, and war pictures. Noteworthy recent examples can be found in "Viva Villa" and "The Scarlet Empress." The illustration shows the making of a very low angle shot for Will James' "Smoky" the angle producing the view of a person being trampled under the hoofs of the horse, which naturally makes the horse seem very threatening. Cavalry charges, stampedes, speeding vehicles and trains, angry or panicky crowds, and the like are usually best taken from a very low angle to give them a more threatening appearance.

High angles, on the other hand, have just the opposite effect—they make the subject seem small and insignificant, and are therefore used by the Russians to show the subordination of the peasants before the revolution. High angles, are likewise effective in creating a dejected mood. They are, however, somewhat more difficult to compose than low angle shots, for they usually include more small objects in the background, while the background for low angle shots may be the sky, a wall, a building, or trees, which are all comparatively simple. If movement is shown from a high angle it is best to have it diagonally across the screen so that it does not divide the screen too evenly.

Crazy angles, in which the camera is tilted on a horizontal plane (so that the picture is not level), or shoots from directly above or below, also have many interesting uses in pictures, such as depicting drunkenness, or insanity, for showing the viewpoint of the characters in the picture, for creating unusual designs—as is so often done with choruses in musical pictures—and to increase the feeling of turmoil and panic in battle and riot scenes, as in the battle sequences of "Farewell to Arms" and "Operator 13." The still of Robert Montgomery illustrates the off-balance and unstable effect produced by a crazy angle, the effect being as if the entire set is about to collapse on the sitter. This suggests the use of the angle in earthquake, flood, and tornado scenes. Crazy angle shots must, because of their unnaturalness, be used sparingly and preferable in short cuts, otherwise they will become too obvious and lose their effectiveness.

The angle chosen has much to do with the composition of the picture. It can produce a predominance of horizontal, vertical, or diagonal lines, each of which, as explained before, has its own psychological significance. The choice of angle permits exclusion of undesired objects or the inclusion of desired ones. The background is an important factor in determining the camera angle, for it should not only form good composition with the principle object, but should make it stand out clearly, that is, it should be in

contrast to the principle object or character—a light background for a dark object (as in the pastoral scene) and vice versa. Simplicity of background, when the foreground is the center of interest, is also desirable.

Amateurs, I believe, are inclined to be too conservative in their camera placement. Not only do they seem to fear unusual angles, but even their normal angles (eye level angles) usually show little initiative in obtaining the best effects and compositions. The type of shot used, depends, of course, on the nature of the action. If the action of a crowd is what we are interested in a full shot of the crowd must be used, while if it is the effect of the crowd on an individual in the crowd a closeup of that individual is necessary. Too often amateurs disregard the importance of camera distance in properly putting a scene across to the audience—in making the audience associate itself with that scene and feel a part of it. Longshots are important in establishing a locale, but too many of them make the picture uninteresting because the audience does not feel closely enough connected with what is going on. The natural instinct of the spectator is to want to get up closer and notice the details. Closeups bring the details to the spectator; they are a powerful aid to dramatic expression when used properly, but must not be overworked. Too much use of closeups certainly does not seem to be the case with the average amateur. Very often titles are used where a good closeup would serve just as well, and many of the longshots would be better if taken as closeups, or at least had closeups cut into them. Notice how every long shot in professional pictures is intercut with closer shots. If the camera angle were not changed throughout a long scene it would become mighty monotonous. Closeups further serve to eliminate undesirable parts of scenery or action and concentrating on the center of interest.

After the scene has once been established in long shot it is usually better to work in closer shots, showing the details of the scene. The importance of details should not be overlooked. Not only do they usually lend themselves well to good pictorial composition because they can be easily arranged and lighted, but they also serve to give dramatic emphasis, if intelligently used. This is especially true in 16mm. pictures, for the screen is so much smaller than in theatres showing 35mm. films that details tend to be lost in long shots. It is a well known fact that a larger picture is more impressive than the same one in smaller size, which is due partly to the fact that larger pictures more nearly fill the natural angle of vision than do smaller ones, and one is less inclined to be conscious of its borders. The chief reason for the impressiveness of larger pictures, however, is that they bring out the details better and necessitate less eye strain to perceive them. In 16mm. pictures, where the screen size is limited, it is best, therefore, to move the camera up closer to the object to be photographed, and the details naturally become more evident. In interiors the amateur should especially welcome details, for it is naturally much easier, with limited equipment, to light closeups than long shots.

Details are an indispensable aid to all travel pictures. No matter how many beautiful pictorial shots a travel picture may contain, it will soon lose the interest of the audience if these are not interspersed with well chosen closeups of native life—whether it be human, animal, or plant—and its various aspects. Japan, for instance, offers many beautiful scenic possibilities, but the chances are that the audience will be more interested in the play of some Japanese children, or in a shot of a street beggar, or in details of the market place and the waterfront, or other human interest scenes. The two—the scenic and the commonplace—should always be blended together to produce contrasts which add interest, realism, and punch to the picture. The beauty of one scene can be enhanced by contrast with the ugliness of another.

IN THE MOTION PICTURE PROP AND RESEARCH DEPARTMENTS

(Continued from Page 5)

gun-fire so that persons won't be injured, and still make the "effects" convincing.

Also connected with the Universal prop department, headed by Russ Gausman, is an artificially heated aquarium in which is kept tropical fish. Each of the studios have plaster shops and wood working departments for manufacturing such items as can not be bought reasonably. Too, not to be overlooked is the plant nurseries.

Hand in hand with the prop department is the research department. Maud Bowman, head of the Warner Brothers research department, like other members of research departments, is supposed to know everything. Questions like, "Who were the kings of England for the last nine hundred years?" "What kind of a beard did Napoleon's third assistant wear?" or, "What horse won at the Pimlico Race Track in Maryland a number of years ago?"

When they are right they never hear about it; but, when they are wrong! Old John W. Fan never overlooks an opportunity to find a rift in the lute!

THE ART OF SELLING PICTURES

(Continued from Page 7)

the size usually submitted is 5x7 or 8x10 inches. In view of these sizes, enlarging has to be resorted to no matter what type or negative size camera is used, unless we consider the 5x7 or 8x10 camera, which we don't. Enlarging should not deter the beginner, for it is not as difficult as it may appear. It is, on the contrary, easy, and besides offers considerable latitude such as dodging, trimming, and shading *without touching the negative*.

The amateur photographer who finds himself bitten by the free-lance bug should avail himself of the information which is plentiful enough these days. For example, the Universal Photographers, Inc., 10 West 33rd St., New York City offer a most complete course in free-lance photographic journalism. The H. Rossiter Snyder Pub. Co., 30 West 18th St., New York City has a series of books on the subject.

Be warned, however, that the road is not a rose-strewn one. It is hard and rough going at times, and takes a good deal of patience and persistence. One cannot become a millionaire at this business, but many have made comfortable livings from it alone. Most prefer to undertake

it as a spare-time hobby, accepting whatever checks are brought forth as payment for new or additional equipment. Once in a great while the free-lance will accidentally come upon a really important "scoop", in which event he can usually buy a brand new outfit with the money he gets for it. Such cases are rare, and purely accidental, so don't bank on them.

It's a grand game, though, even for fun.

BELL & HOWELL ANNOUNCES FILMO 8 mm. PROJECTOR

An 8 mm. motion picture projector, the Filmo 8, that will throw steady, flickerless, and beautifully brilliant pictures on a screen five or six feet wide, has just been announced by the Bell & Howell Company.

The new projector employs a 300-watt lamp in a most efficient direct lighting system, and operates on 110 volts, A.C. or D.C. Except that it is smaller, it looks like the very finest Filmo 16 mm. projector, the Model J; and it is built just as precisely and is just as rugged as its 16 mm. big brother. Film sizes considered, it performs just as efficiently—and so simply that anyone can learn to operate it in a few minutes.

It is gear driven—there are no chains or belts inside or outside. Among many other superlative features, it has an automatic power rewind, pilot light, convenient tilt, manual framer, provision for still picture projection, Cooke 1-inch F 1.6 (unusually fast) projection lens, and adequate cooling for efficient, economical use of the high-powered lamp. Its capacity is 200 feet of 8 mm. film. The film is fully protected at every point of contact.

This new Filmo 8 is a genuinely efficient projector for 8 mm. film. The size of the pictures is as large as is necessary for almost any home showing, and the quality of the projection is a source of real delight for those who have gone in for 8 mm. movie making and want to get the ultimate out of their films.

Director George Stevens who has scored heavily staged shorts for Universal, Hal Roach and others, has signed with R. K. O. for a series of features. Our prophecy for Director George is that he will write his name high in the M. P. Hall of Fame.

Len Powers, champion welterweight of the International Photographers is the proud recipient of a beautiful white overcoat. Why white, Len?



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MINIATURE CAMERA PHOTOGRAPHY

(Continued from Page 13)

finder, for parallax.

Leica Single Exposure Camera: E. Leitz now offers a new precision miniature photographic apparatus in the form of a single exposure camera. It consists of a round metal body into which a standard Leica lens is screwed. An Ibsor shutter is provided. Focusing is accomplished by means of a ground glass which slides in and out of the camera interchangeably with metal film holders which accommodate 35 mm. motion picture film in strips $1\frac{1}{2}$ inches long. If desired a finder can be attached to the camera. This new apparatus is really a miniature view camera. Literature describing this camera can be obtained by writing to E. Leitz, 60 E. 10th St., New York, N. Y.

New Contax Accessories: Carl Zeiss, Inc. announce the addition of new accessories for the Contax Camera including apparatus for taking instantaneous exposures of close objects (20, 13 and 8 inches), copy attachments, a plate adapter, apparatus for photomicrography, projection, etc. An interesting booklet describing these new accessories can be obtained by writing to Carl Zeiss, 485 Fifth Ave., New York City, N. Y.

The Nikor Tank: A new developing tank is being offered by Burleigh Brooks which is called the Nikor Tank. It is made entirely of stainless steel which does not contaminate the developing solution as other metal alloys are apt to. The tank can be cleaned with strong nitric acid without being injured. It can also, according to the investigations of Dr. Franz Baur and Dr. Gottlieb Imhof on stainless steel, be used for physical development. This tank is offered at a reasonable price and should prove popular with miniature photographers.

A Method of Printing Grainy Negatives: In a grainy negative there exist relatively large clumps of silver grains and similarly large interstices between these clumps. If the grains were enlarged so that the interstices were reduced in size, graininess would be reduced. At the same time, however, detail would suffer and there would also be a loss in definition.

By treating the negative according to the method described below, the grains of silver will be converted into a silver compound that will occupy a larger space. The expanded grains will fill up some of the interstices previously present thereby giving a more even deposit.

A 10% solution of potassium iodide is made up and in it is dissolved enough iodine to make a 0.5% solution. The negative is treated with this solution until it bleaches completely, the silver image being converted into silver iodide, after which the negative is dyed with Rhodamine B to give the opacity necessary for printing. The negative is then rinsed to free it from excess dye and when dried it is ready for printing.

Many experienced workers use a diffusion filter over the enlarging lens when making big enlargements to help eliminate graininess. A very light diffuser such as the Scheibe 1/64 Diffusion Filter will work well for this purpose.

Panatomic Film in Bulk: Miniature camera photog-

raphers who use Panatomic film in the 35 mm. motion picture size and wish to buy it in bulk, should know that this film is known to the motion picture industry as Eastman Background Negative. Its extreme fine grain qualities make it ideally suited for motion pictures of subjects which will be used in the transparency projection process. When ordering Panatomic film in bulk, you can therefore, refer to it as Eastman Background Negative.

Another Fine-Grain Developing Formula: It will be noticed in this formula that acetone is used as an alkali.

Solution A

Oxalic acid.....	0.4 Gms.	18 grs.
Metol (Johnson).....	4 Gms.	175 grs.
Pyrogalllic acid.....	12 Gms.	1 oz., 88 grs.
Potassium metabisulphite.....	1 Gm.	44 grs.
Water.....	200 cc.	20 oz.

Solution B

Sodium sulphite (cryst.).....	48 Gms.	5¾ oz.
Water.....	168 cc.	20 oz.

Solution C

Acetone.....	40 cc.	4 oz.
Water.....	200 cc.	20 oz.

A working solution is made up by taking 15 parts of each solution and adding 80 parts of water.

Reticulation: The usual cause of this detriment to our negatives is the use of processing solutions which vary widely in temperature. If the negative is transferred from a warm hypo solution to cold wash water, etc., a strain will be set up in the gelatin causing reticulation. Some workers have also discovered that the use of a strong hypo solution is prone to cause reticulation. The strong solution acts too quickly and violently upon the emulsion thereby straining the gelatine. Photographers who have been experiencing reticulation despite careful guarding against differences in temperature of the processing solutions should try the use of a weaker hypo solution to overcome this evil.

Alcohol for Drying: Many miniature camera workers use alcohol to hasten the drying of their films, for fast drying favors fine grain. They may be advised that alcohol also has a very slight reducing effect on the negative. No doubt, in the average well exposed negative this reducing effect of alcohol will not cause deleterious effects in regards to subsequent printing.

Care of Cases: Practically all miniature camera owners take good care of their cameras, but many are prone to neglect their cases. The ideal treatment for leather camera and lens cases is the application of neetsfoot oil about twice a year. This substance is obtained from the feet of cattle and keeps leather in a soft and pliable condition. It can be obtained at any drug store.

The oil is applied to the leather with a piece of absorbent cotton or a soft cloth and the case is laid aside to allow the oil to soak into the leather. During cold weather a precipitate will form in the oil. This is easily re-dissolved by the application of heat.

L. A. AMATEUR CINE CLUB

A unique and unusual meeting of 16 mm. amateurs is planned for August 7th when members of the Los Angeles Amateur Cine Club meet in the Auditorium of the Hollywood Citizen-News. This will be "Title" night, when every member who has found short-cuts or unique methods of making titles, either with apparatus built by himself or through experimentation, will demonstrate his findings. According to Wm. J. Seeman, chairman of the program committee, it is planned to take movies of actual titles of varied kinds and to do the development and coloring at the meeting.

This is a part of the Club's monthly program to use every other meeting for demonstration or talks by professional cameramen, with alternate meetings devoted to contests among members.

Included among the interesting films done by the members is a composite 1600 foot film of the Olympic Games. Taken by some 30 cameras, the best of 8,000 feet is used to include the major events of those fourteen days.

At present a progressive picture is being made of the Hoover Dam. Started in 1928 it shows the construction and development of the world's greatest engineering feat.

MOTION PICTURE SOUND RECORDING

(Continued from Page 19)

horns were also turned on and their switches set on tap twenty, they would not disturb the impedance match. For three horns, possible combinations would be taps two, six and eight; or taps four, six and six. The exact combination used in any particular case depends on the comparative volumes of sound required of the several horns.

Photo-Electric Cell Monitoring

The two relays that are shown in the diagrams are known as relays No. 1 and No. 2. Their windings are energized by current from the twelve-volt storage battery that supplies power to the signal system. Two key switches mounted on the mixer panel in the monitor room control the relays. Another set of key switches installed in the middle amplifier bay permits the transmission engineer to operate the relays when making gain runs or other tests on the recording system.

When relay No. 1 is in its normal position, the circuit is connected for direct monitoring. When relay No. 2 is normal, its blades are connected to the photo-electric cell amplifier in film recording machine No. 1. If the monitor man closes the key switch controlling relay No. 1, that relay is energized and connects the monitoring amplifier to the photo-electric cell monitoring circuit. Since the No. 2 relay is normal to PEC amplifier No. 1, the monitoring amplifier is connected in the above case to that PEC amplifier. But if the key switch associated with relay No. 2 is also closed, the energizing of that relay transfers the monitoring amplifier to the output of PEC amplifier No. 2.

This arrangement provides the monitor man with means for checking at any time on the continuity of the film recording circuits. No means is available for him to check on the wax (or disc) recording machines; but that is not necessary because the recording engineer keeps the cutting of the wax record under constant observation during recording to determine if there is any cutting over between grooves.

The photo-electric cell amplifiers will be described in the chapters on film recording, which will be the subject that will be begun in next month's issue.



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LOOKING DOWN ON THE ROOF OF THE WORLD

(From *Kinematograph Weekly*, London)



MOST interesting description of the Houston Mount Everest Expedition was given by Lt.-Col. L. V. Stewart Blacker, O.B.E., at a Royal Photographic Society meeting. Col. Blacker's lecture was illustrated by slides of outstanding pictorial quality, several of which had been enlarged from the kinematograph films taken by the G.-B. cameramen, Bonnet and Fisher.

Col. Blacker explained that the expedition had three objects—vertical photography for mapping purposes, oblique photography, and kinematography. He paid tribute to the patriotism of Lady Houston, through whom the expedition had been rendered possible.

Frozen Celluloid

He proceeded to outline some of the difficulties which had to be overcome, owing to the intense cold and rarefied air. Celluloid, for example, froze and became brittle at such low temperatures, and it was necessary to have internal heating elements in all the photographic apparatus, and also to surround it by heated blankets.

Owing to the fierce winds encountered at high altitudes, there was considerable difficulty in allowing for drift, and the method of setting the camera in the reverse direction to the angle of drift was explained.

The Williamson Eagle camera used gave 140 exposures each 5 in. x 5 in., and included also records of time, compass bearing, altitude and serial number; the camera was entirely automatic in operation, and made exposures at pre-determined intervals, a red light appearing on the pilot's instrument board as a signal to hold the plane

steady while the exposure was made. The hand camera used was also a Williamson, while for kinematography a Newman-Sinclair was chosen.

Air-Driven Generator

All the equipment, including camera motors and heating gear, and energized from a 1,000-watt air-driven generator, the voltage of which had to be kept constant at between 13 and 14 volts by means of a sliding resistance. Col. Blacker created some amusement by describing the complicated heated flying clothing which was necessary for both pilot and observer (although the latter's cockpit was enclosed), about 20 different connections having to be made to various parts of the aeroplane for electricity supply, telephone, oxygen, etc.

Another difficulty encountered was that at high altitudes the light was found to be so actinic that it penetrated the close-fitting dark slides, which had to be carefully wrapped up when not in use.

On one occasion Mr. Bonnett while using the kine. camera accidentally broke his oxygen pipe, and rapidly became unconscious. Fortunately, he fell in the cockpit near the broken end of the oxygen pipe, and recovered sufficiently to make a temporary repair.

Some of the views taken at distances of 100 miles by means of infra-red photography gave a remarkable insight into the possibilities of this medium, objects which had been invisible to the naked eye appearing perfectly sharp and clear. Col. Blacker completed his most thrilling account of the expedition with interesting views of the Nepalese territory.

B & L PHOTOGRAPHIC LENS EXHIBIT AT CHICAGO FAIR



THE professional photographer, or the amateur, who visits the Hall of Photography at the Century of Progress will find the Bausch & Lomb Photographic Lens Exhibit an extremely interesting contribution to the science of photography with which Bausch & Lomb has been identified since its beginning. Since 1887, when D. Edward Bausch invented the iris diaphragm shutter which made it possible, for the first time, to take snapshots, a continuous series of patents has been granted on photographic lenses and mountings.

One particularly interesting lens in the group on display is the Convertible Protar type, f:6.3 which Captain A. W. Stevens of the Army Air Corps selected for use in the camera that he invented for photographing the earth automatically at regular intervals. Every minute and a half an exposure is made. Through these photographs, checked with the barometric readings, an accurate chart of altitude will be obtained. The camera, focused straight down, will show the curvature of the earth, thus permitting comparatively accurate mathematical measurements of altitude. The Convertible Protar Lens is ideal for this purpose, experiments have proven.

Another lens which has won high praise from the Army Air Corps is Aero-Tessar f:6, 24 inch focus. Because of its high correction and its speed this lens has been found exceptionally useful in making precise air maps, a vital phase of national defense.

In the movies the Raytar Lenses are being used in the Hollywood studios to make finer pictures, while the Cinephor lenses are equally popular in theatres for the bril-

liance and clarity of their projection.

The news cameraman, driven to secure his snaps hurriedly, uses the Bausch & Lomb Tessar Series Ic. and the many excellent newspaper illustrations seen today are made with the B. & L. Process Anastigmat. Such work, in order to obtain orthoscopic effect, requires very accurate glass prisms for the reversing of the image.

In industrial photography where correct records are essential, and in police work where they are equally necessary, the Tessar Series IIb and the convertible Protar Series VIIa lenses are widely used.

The portrait photographer used the Bausch & Lomb Sigmarr where fine details are desired without harsh contrast. These lenses furnish ample speed in order to record the characteristics of the human face so essential in true portraiture. The Plastigmat is also liked by the professional photographer because of the pleasing softness with which it renders natural likenesses.

The increasing popularity of home movies has brought increasing calls for the B. & L. Biophor projection lenses, designed to meet the need for pictures of varied sizes in rooms of many dimensions.

The Bausch & Lomb Photographic Lens Exhibit will also show the Compound Shutter, the precise construction of which makes it absolutely dependable at the various speeds indicated.

A new and interesting folder on the Convertible Protar Lens is now being prepared by Bausch & Lomb which may be had on request.

BELL & HOWELL ESTABLISHES 16 mm. SOUND FILM RENTAL LIBRARY

Bell & Howell Company announces the establishment of a 16 mm. sound-on-film rental library with branches already opened in various key cities of the country.

A prime aim of the library management is that the subjects shall be both interesting and absolutely clean. Each picture, before being chosen for the library, is viewed by a screening committee which requires that it must first of all be genuinely high grade. It has been found that the rental market includes lodges, luncheon clubs, women's clubs, schools, parent-teacher associations, churches, and home gatherings; and the requirements of such groups are kept definitely in mind by the committee in making their selections.

Fully a hundred 400-foot reels from Educational Film Corporation and other producers are now available in the library. In addition to such popular informative pictures as "Krakatoa", spectacular submarine volcano three-reeler, is the Erpi educational series with subjects on acoustics, energy, etc.; also beautiful presentations of outstanding operas, including "Carmen", "Faust", and "Martha"; a fine array of travel subjects; rollicking comedies; and a large variety of well-selected miscellanies.

Prominent in the library listings will be what is called a series of Feature Lecture Films, including five subjects in which the voice of the well-known explorer, Rev. Bernard Hubbard, will be heard describing his Popular Alaskan pictures. In this same series the voice of A. M. Bailey, director of The Chicago Academy of Sciences, will be heard in an interesting running commentary of his movies of "Wild Life Over the Gulf of Mexico"; also in a similar manner, Richard Finnic, the dashing young Arctic adventurer, will describe his popular picture "Among the Igloo Dwellers." Major Sawders will likewise be heard accompanying his "Republics in the Clouds"—a really remarkable motion picture of the little known countries of Bolivia, Peru, and Ecuador.

"This Is America", a six-reel feature, has just been added to the library. "This Is America" is a stirring sound picture dealing with events in America from the days of the World War and President Wilson in 1917 to the inauguration of President Roosevelt in 1933. Much of the sound consists of a commentary on the pictured events written by Gilbert Seldes and spoken by Alois Havrilla.

Among the many interesting personal shots in "This Is America" are striking pictures of Woodrow Wilson in Paris and Franklin Roosevelt as Assistant Secretary of the Navy; also there are characteristic shots of Calvin Coolidge, Warren G. Harding, and William Jennings Bryan, to mention only a few of a host of outstanding personalities. Battlefield scenes, the crash on the stock exchange, even the era of "pole sitters", are all depicted and commented upon most interestingly. The whole story of the tremendous years of 1917-33 is presented in a vivid, unforgettable record.

The Bell & Howell Company is to be congratulated on its constructive efforts to make available such a large number of high-grade, interesting 16 mm. sound-on-film subjects.

The exact name of the library is the Bell & Howell Filmosound Rental Library. H. A. Spanuth, who helped build up the company's silent film library, is in active charge. Already branch libraries have been established in Altoona, Pa.; Denver; Washington, D. C.; Wilmington, Delaware; Baltimore; New York; Philadelphia; Providence, Rhode Island; Chicago; San Francisco; and Hollywood.

HERE ARE FACTS ABOUT ABOUT

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or, by switching the stop scale over a half circle, you may select the Continental diaphragm stop series:
f/.9-1.2-1.5-1.8-2.5-3.5-4.5-6.3-9-12.5-18-25-36-48
- Exposure time readings:
On the main scale, from 1/1000 to 100 seconds;
On the auxiliary interpolation section of the scale, down to 2500 seconds at stop f/64 for 26 degree Scheiner film.
- The same scale gives you cine camera taking speeds of: 8-12-16-24-32-48-64-96-128 frames a second and the same scale contains specific Leica camera shutter speeds.
- The dust-proof, circular, metal housing is 2½ inches in diameter, 1 inch high, has no protruding or loose attachments—just the lens in front and an unbreakable window slit on the side. Robust, expert construction and extreme sensitiveness.
- The PHOTOSCOP is pointed or aimed like a camera. The scale is read in proper reading position, just as when you look into the "brilliant" reflecting viewfinder of a camera.
- The instrument solves swiftly and automatically any photographic exposure problem without changing the aim or lifting the meter.
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- The light is collected from the subject by the lens which is placed symmetrically about the cell axis, and the angle is further effectively limited by means of baffles or grids, situated between the lens and the cell surface. Over 45 percent of all the light comes from an angle of 10 degrees either side of the axis, and altogether 85 percent from an angle of 20 degrees on either side. Any other light beyond the total of 40 degrees at the light cone apex is of no practical influence upon the photographic exposure results.
- Temperature is of no practical influence upon meter accuracy. The PHOTOSCOP has been checked for use in tropical and polar regions as against temperate zone readings. Certain effect does take place, of course, from 32 degrees F. to 120 degrees F., but the percentages are of no photographic importance.

■ This Universal U. S. Model is made only for Photo Utilities and distributed in the United States by Photo Utilities, New York.

■ The Price, including leather neck-strap, is
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NINTH INTERNATIONAL CONGRESS OF SCIENTIFIC AND APPLIED PHOTOGRAPHY PARIS, JULY 7-13, 1935

By WALTER CLARK

Secretary, American National Committee, International Congresses of Photography.

THE first International Congress of Photography was held in Paris in 1889. Since that time meetings have been held at intervals of three to five years, excluding the four-year war period, in Liège, Brussels, London, and Dresden, in addition to Paris.

The next Congress, the Ninth, will be held again in Paris next year, 1935, from Sunday, July 7, to Saturday, July 13. The meetings will be held in the rooms of the Société Française de Photographie et de Cinématographie, 51 rue de Clichy, Paris (IX^e).

The Ninth Congress will be organized on lines similar to those of previous congresses. The active organization will be in the hands of a French Committee consisting of representatives of many of the scientific, photographic, and allied societies of France, and headed by the French Photographic Society. The arrangements in other countries are made by the local National Committees. These committees have been established in many countries to deal with the proposals and recommendations of the congresses, to present material to the congresses for international consideration, to arrange for a series of first-class papers on appropriate photographic subjects to be submitted to the congresses, and so on.

The Secretary of the American Committee is Dr. Walter Clark, Research Laboratories, Eastman Kodak Co., Rochester, N. Y. There are two Sub-committees in this country, dealing respectively with Sensitometric Standardization and Motion Picture Standards.

SECTIONS: The Ninth Congress will be divided into several Sections, concerned with:

- 1a. Latent Image.
- 1b. Sensitive materials and their manipulation.
- 1c. Sensitometry and photographic photometry.
2. Cinematography; general considerations, sound on film, standardization.
3. Scientific and technical applications of photography and cinematography.
4. History of photography, documentation and bibliography; photographic instruction; pictorial photography.

Among the subjects about which there will undoubtedly be lively discussion will be the standardization of methods for the determination of speeds of negative materials, and the standardization of the dimensions of sub-standard motion picture film for sound-on-film purposes.

MEMBERSHIP: The Congress will include the following classes of Member: Founder Members (minimum subscription 1000 French francs); Subscribing Members (minimum 300 frs.); Active Members (125 frs.); Associate Members (25 frs.).

With the exception of the Associate Members, all the members attending the Congress will receive, at the Congress Secretary's office, the texts of all Communications and Reports, as well as résumés of these texts in various languages. They will eventually receive the volume of Proceedings.

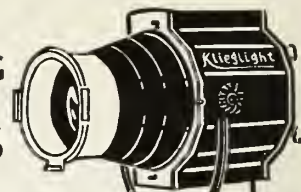
The accompanying photograph discloses just how a corkscrew camera effect was achieved at Warner Brothers—



Still by Bert Longworth

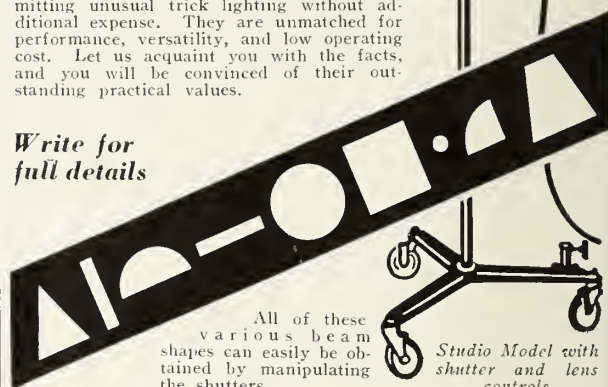
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PAPERS: Reports and papers submitted to the Congress from the United States should be sent in duplicate to the Secretary of the American National Committee by February 1, 1935, so that he can have them in the hands of the General Secretary by March 1, 1935. Only in these circumstances can they be translated and distributed.

Reports and résumés can only be given to Members attending the Congress if their subscriptions have reached the Société Française de Photographie et de Cinématographie by June 1, 1935.

LANGUAGES: Discussions will be held in one of the following languages: English, French, German. Authors should write their texts where possible in one of these languages.

ENTERTAINMENTS: Entertainments, visits to factories, and scientific institutions, excursions, and a banquet will be organized, and all Members of the Congress will be able to attend. For Associate Members, a Committee of Ladies will organize tours in Paris and the surroundings, and visits to buildings of interest, during the Sessions of the Congress.

INFORMATION: For further information about the Congress, application should be made to the Secretary of the American National Committee, Dr. Walter Clark, Research Laboratory, Eastman Kodak Company, Rochester, New York.

CORKSCREW CAMERA EFFECT

First National Studios during the filming of the "Tunnel of Pulchritude" sequence in one of the Busby Berkeley ensembles in the musical production, "Dames."

The steel framework, which supports the platform on which is the camera, was suspended from above, and moved in two directions with power transmitted through a series of trolley tracks high on the rafters.

George Barnes, the cameraman, is seen crouched over the revolving shaft which led back from the camera, at the right, to a wheel at the other end of the platform operated by Warren Lynch, first assistant cameraman. As the platform moved forward through the tunnel, lined on four sides with beautiful girls, Lynch rotated the wheel, the shaft turning the camera in like fashion as it moved forward through the bewildering set.

When seen on the screen this scene will cause conjecture no end among photographers and camera-wise workers of the cinema, as to the mechanics of the filming, but the major difference in this shot, compared to others, is a very obvious one. Instead of moving the photographed objects before the camera, the camera moved instead.

WHY "HENRY VIII" WENT OVER IN LONDON AND LOUISVILLE

(Written for International Photographer)

By ALFRED C. MOORE, Journalist, London



ALEXANDER KORDA'S "Private Lives of Henry the Eighth" has been one of the most over-rated pictures in recent years, and probably nobody knows this better than Mr. Korda.

If you had read the London press reports of this picture's preview you would—if you paid serious attention to Fleet Street "film critics"—have been led to believe that some kind of Messiah had arrived in the person of Mr. Korda, and that the beginning of the end was in sight for Hollywood, California. But when you saw the picture you recognized that what you were looking at would have been "just another movie" had it emanated from Hollywood—which it certainly would not have done in the form in which it went through the projector.

Here was a number of sequences strung together in a manner which showed you plainly that the person responsible for the stringing had learned a whole lot of useful tricks by the simple process of intelligently watching Hollywood movies, but which, as a production, fell short of the standard of cohesion that the major studios on the coast regard as routinal.

You saw Charles Laughton who made you feel that a king could be a man and a man a king. You saw Lady Tree who made you realize that a woman could have a title and still be a motion picture actress. You saw a lot of good shots and a lot that were not so good. You saw promise of minor climaxes that did not materialize. You saw the picture really get moving then miss on a couple of cylinders and threaten to go stone dead on you. There were scenes powerful in emotional appeal, others charged with drama as good as the best from Hollywood. And there were other scenes as dull as English studios ever turned out.

So why did "Henry VIII" go over as good entertainment and as a fair revenue proposition in places as far apart as Chelsea, Capetown and Kansas City? Well, you don't have to be a front office wizard to find the answer. It's just this.

Korda was smart enough to make, not an historical picture with a kingly king playing the heavy and a lot of footage taken up with the medieval pomp that classbooks, even in English schools, can't "sell" to the kids any more, but a human story of a man with the kind of weaknesses and idiosyncrasies still common to all men. In fact "Henry the Eighth" as conceived by Korda and as played by Charles Laughton was none other than our old friend George F. Babbitt, six times married and conveniently flashed back from Main Street, Zenith, U. S. A. to Hampton Court Palace, Middlesex, England.

In lots of places the resemblance stuck out a mile.

Too comfortably married to the first Mrs. Henry VIII (Catherine of Aragon to you), this sixteenth century Babbitt wanted romance just like George F. did. Both of them adipose and fifty; the realtor of Zenith sought it in his "dream child, who, when others saw George Babbitt, she discerned gallant youth." Once he thought he'd found it in Ida Putiak, the silly, smiling, black-haired manicure girl. The wife butcher of Hampton Court sought it in Katherine Howard, court lady-in-waiting. Both Miss Putiak and Miss Howard gave their men the run-around.

Fundamentally Henry and George's slant on life was identical—"Boosters, Pep!" And Cranmer, Henry's archbishop, and old Matt Penniman, George's "general utility man, collector of rents and salesman of insurance—broken, silent, gray," were blood brothers.

The barber shop scene in "Private Lives of Henry the Eighth," with dialogue to fit, might easily have taken

(Concluded on Page 30)

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BELL & HOWELL Professional Motion Picture Camera complete with 35—40—50—75 mm. lenses and Mitchell tripod legs. Also Akeley Camera complete with 2 in., 6 in., 17 in. lenses. Mervyn Freeman, 1960 South Vermont Ave., Los Angeles, Calif. Phone: REpublic 3171.

FOR SALE—CAMERAS AND EQUIPMENT

FOR SALE—Motor-driven DeBrie, 50, 75 mm. Zeiss, 6 magazines, Tripod, Battery case and batteries, carrying case, runs 24 speed, \$400.00. Camera Supply Co., Ltd., 1515 No. Cahuenga Blvd., Hollywood.

FOR SALE—Pathe cameras late numbers, excellent shape, complete from \$90 up, including beautiful outfit with built-in shutter dissolve, Veeder counter, ground-glass focusing. Camera Supply Co., Ltd., 1515 No. Cahuenga Blvd., Hollywood.

FOR SALE—Silent Mitchell Camera, very late number, in perfect condition, complete with all equipment, lowest priced Silent Mitchell in town. Will not be here long. Write Air Mail or cable for price. Camera Supply Co., Ltd., 1515 No. Cahuenga Blvd., Hollywood.

NEW AND USED HOME MOVIE CAMERAS—DeVry Motion Picture Cameras—sound on film portable projectors with operators for rent. Photographic supplies—fine grain finishing—courteous service. Educational Project-O Film Co., 1611 North Cahuenga, Hollywood.

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FOR SALE OR RENT—MISCELLANEOUS

MITCHELL MOTOR—1000 ft. Mitchell magazines. J. R. Lockwood, Glendale. Douglas 3361-W.

FOR SALE—75 mm. Cooke Lens. F.2 in Mitchell mount complete. 50 and 75 mm. Astro lenses, mounted and unmounted. J. R. Lockwood, 523 North Orange Street, Glendale. Douglas 3361-W.

BUYERS READ these classified advertisements as you are now doing. If you have something for sale or exchange—advertise it in these columns. THE INTERNATIONAL PHOTOGRAPHER, 1605 No. Cahuenga Ave., Hollywood.

FOR RENT—25 and 35 mm. lenses, motor adapters, Mitchell Standard tripod head, baby tripod, 400 ft. Mitchell magazines. J. R. Lockwood, 523 North Orange St., Glendale, Douglas 3361-W.

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THE INTERNATIONAL PROJECTIONIST, a monthly magazine published in the interests of the projectionist. Interesting, instructive. Yearly subscription U. S. and possessions, \$2; foreign countries, \$2.50. James F. Finn Publishing Corp., 1 West 47th St., New York.

WANTED TO BUY

WANTED—Motion Picture and Still Cameras, all types, Lenses, Finders, Tripod Heads, Leica or Contax Cameras. Cash for bargains. Camera Supply Company, 1515 No. Cahuenga Blvd., Hollywood.

WANTED TO BUY—Used Leica or Contax cameras and any kind of accessories for above cameras. Must be cheap. Box XYZ, International Photographer, 1605 North Cahuenga Ave., Hollywood.

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MISCELLANEOUS

COMPLETE COURSE IN FLYING—If interested in aviation, see Roy Klaffki, 1605 North Cahuenga Ave., Hollywood.

WANTED—To know of the whereabouts of motion picture relics, documents, or equipment of a historical nature for Museum purposes. Write Earl Theisen, care of International Photographer, 1605 Cahuenga Ave., Hollywood.

TRICK PHOTOGRAPHY. Exclusive agency for three leading Hollywood makers of trick lenses. Apply for prices and demonstration, sale or rentals. Camera Supply Co., Ltd., 1515 Cahuenga Ave., Hollywood.

QUIET COUPLE WANT COTTAGE—mountains or beach—second or third week in August, or second week September—must be reasonable. Address, P. O. Box 313, Hollywood, Calif.

WHY "HENRY VIII" WENT OVER IN LONDON AND LOUISVILLE

(Continued from Page 29)

place in the barber shop of the Reeves Building down on Third Street, Zenith. And the short falconry sequences in "Henry VIII" were merely sixteenth century transpositions of Babbitt's fishing trip in the Maine woods.

Realizing that the "prythee faire ladye" kind of English was definitely out, Korda even modernized his dialogue and made such a sound job of it that the illusion held and, had the picture got away to a quicker start, been ruthlessly revised and speeded up in spots, and if it had not flopped to a static climax, the boys who are paid to blow their trumpets in the London newspapers would not have had to get themselves so hot and panting. And Alexander Korda's reputation as a movie maker would have been twice the size it is now.

WHAT'LL WE FILM NEXT?

Many people are wondering what the screen is going to do for vital stories, in view of the fuss that has been kicked up by church organizations and women's clubs over certain offending aspects of recent motion pictures. They fear that the fumigating process will result in taking all the life out of future film-fare.

But there is no cause to become unduly exercised on that account. For the resourceful writer, there is no end of interesting material all around us. Fact of the matter, is the recent craze to glorify gangsters and sordid sexiness, life's negative aspects, a lot of wholesome, cheerful activities have been entirely overlooked.

Right here in California, men and women are constructively busy with some of nature's most fascinating forces and processes—any one of which would make a most picturesque background—a veritable cameraman's heaven—for many engaging screen productions. The rank and file of people are always interested in what their fellows are doing.

Take the vineyards of California, for instance, which have taken a new lease on life since repeal. More than 400 of them, covering an extensive acreage, are now being worked as never before, to produce grapes for the wine industry. It requires no violent stretch of the imagination to vision a story written around California's vineyards, which would readily charm picture-goers. Only recently the vineyardists of France subsidized a motion picture, built around their industry. It has been acclaimed as one of the most lilting productions to be seen in Paris, in a long time.

Other scenes in California's social and industrial life are equally potential for uplifting motion pictures. For instance, there is the story of the hydro-electrics—an epic of modern engineering—which has never been adequately screened. And what a whale of a picture might have been done around the building of the Boulder Dam—the biggest engineering project since the Panama Canal was dug. Then there's a great motion-picture in every one of President Roosevelt's remedial activities, for the resourceful writer and producer who can see beyond the front-page of scandal sheets and so-called mystery or murder stories. If the world is ever to get back on the main highway of social and moral recovery, the upward watch must be held before the people. Instead of picturing most tendencies and people as being hell-bent, they must be shown in their more aspiring moments. There is no lack of them.

The serious efforts of the Federal Government to rehabilitate the homeless, wayward youth of the land provides material for as gripping a picture as ever came out of realistic Russia. There is also gorgeous material in the studies which Sherwood Anderson has been presenting in "Today," about the wandering women of America. For the first time in our history, unsettled economic conditions have made "female hoboes." No sadder picture can be imagined than that of a homeless woman or a homeless cat or dog. They are all essentially creatures of the hearthstone.

Also there is California Institute of Technology, in whose laboratories, earnest men are trying to figure out the riddle of the universe as it relates to the everyday life of every man, woman and child. Several of the experimenters there have stories up their sleeves which would be as fascinating on the screen as anything that Conan Doyle, H. G. Wells or any other thinker has ever brought to the printed page. While up on Mount Wilson, overlooking Los Angeles, conners of the stars can tell romantic tales of Martians, moon-folk and such, which make the puny imaginings of Hollywood studio "hacks" pale into insignificance. Dr. E. D. Starbuck, of the philosophy

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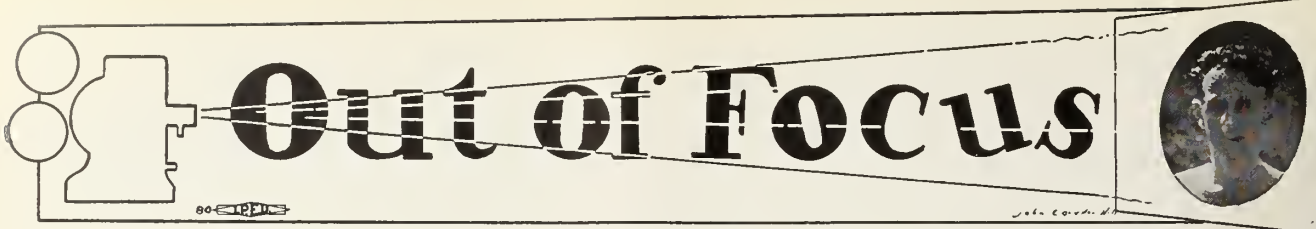
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department at U. S. C., might also contribute cogent material from his studies.

These are all subjects which relate themselves naturally to life "as is", in its contemporary idiom. And the screen, will never achieve its highest destiny until it takes itself a bit more seriously. That does not mean that all pictures should be pedantic. The entertain *per se* production will always have its place and audience; but there is also a public looking for something a bit more thoughtful.

Out of Focus



BE A BUG PHOTOGRAPHER



We were fortunate this month in securing a one-half tone cut (that has been used before) of Mr. Layton Imidge, the original inventor of the three legged tripod. Mr. Imidge used a "Watkind" exposure meter and a ground glassless ground glass on his camera. In the background is the famous Imidge Deep Sea Tripod. This is mounted in a boat and can be lowered by letting water into the boat, and raised by bailing the water out. Mr. Imidge is the author of "Make Money With Your Camera" (and has been trying to, for years), and in between "makes" has bent his fragile pen on the following article. Thanks! Mr. Imidge. We owe you "something."

WHY not make some extra money during August, September and the first two weeks in October? It can be done and all you need is a camera and some film. Then get "dressed up" to go fox hunting, like the gent in the above picture, and take your camera out in the garden. Opportunity lies in both directions. We can have our choice of flowers, beautiful vista's trees or bugs. So, let's go bugs.

This is very interesting work and if enough time and effort are given to this subject one may become an expert. Bug experts are in demand at the present time and the mere fact of admitting you are "buggy" will do no good. It is necessary that you prove it, and with the aid of your pictures you will be able to convince the most skeptical.

Now we are in the garden. We look about and see if we can catch an insect of the suborder Heteroptera or of the order Hemiptera. A Trilobita, Pycnogonida, Entomostraca or a Malacostraca will do. We might even find a Bufonadae which is of the suborder Phaneroglossa. These can be easily identified as they have procroelous vertebrae without ribs and no teeth which is something these days.

If this is going to cause too much arguing we can take a small crustacean. Their bodies are covered with a chitinous integument with calcareous matter. If you don't care for some of this, and still want a crustacean, try hitting it with a hammer. If it cracks—that's it.

Now we have a bug. Then go get yourself a board. Take a nail in the right hand, a hammer in the left, and have some one hold the bug while you drive the nail through it. This is just a minor detail, but the idea is to keep the bug from moving away when you are ready to make your exposure. After the bug has been nailed, go sit on a rock until the bug stops wiggling. Of course you could hit the bug on the head with a hammer to stop the wiggling, but this might change its appearance.

Now the bug has stopped wiggling. Start to set up the camera and go back to the house for the set screw for the tripod, that you left on the table. You are back again and the camera and tripod are ready. The next thing is to hang the board where the light will be good and this

is on a tree. Nail the board to the tree and as soon as this is done you will discover the bug has fallen off the board and is lost in the grass. You should have one nail left and this should be used in making the board on the tree secure. Drive the nails all the way in and then look for another bug.

Time flies. You have another bug, and when you go to nail it on the board you discover the light has changed and the board is in the shadow. This is something that can not be prevented as the sun moves from east to west, so do not become discouraged. Try and remove the board from the tree and you will notice that it splits easily. A crustacean on a split board would not be considered good composition so a new board must be procured. Oak is a hard wood and does not split if holes have been drilled for the nails. The dining room table is generally made of oak, and after you have sawed the center out of the table and drilled the holes for the nails, we go back to the garden and discover the ground glass was left off the back of the camera and some cute little cuckoos have built a nest in the bellows. This brings us to—

Bird Life. This is a very interesting subject and if we can borrow the dictionary again and find some more trick words, we will do something about it.

YES, INDEED

By A. KAMERA MANN

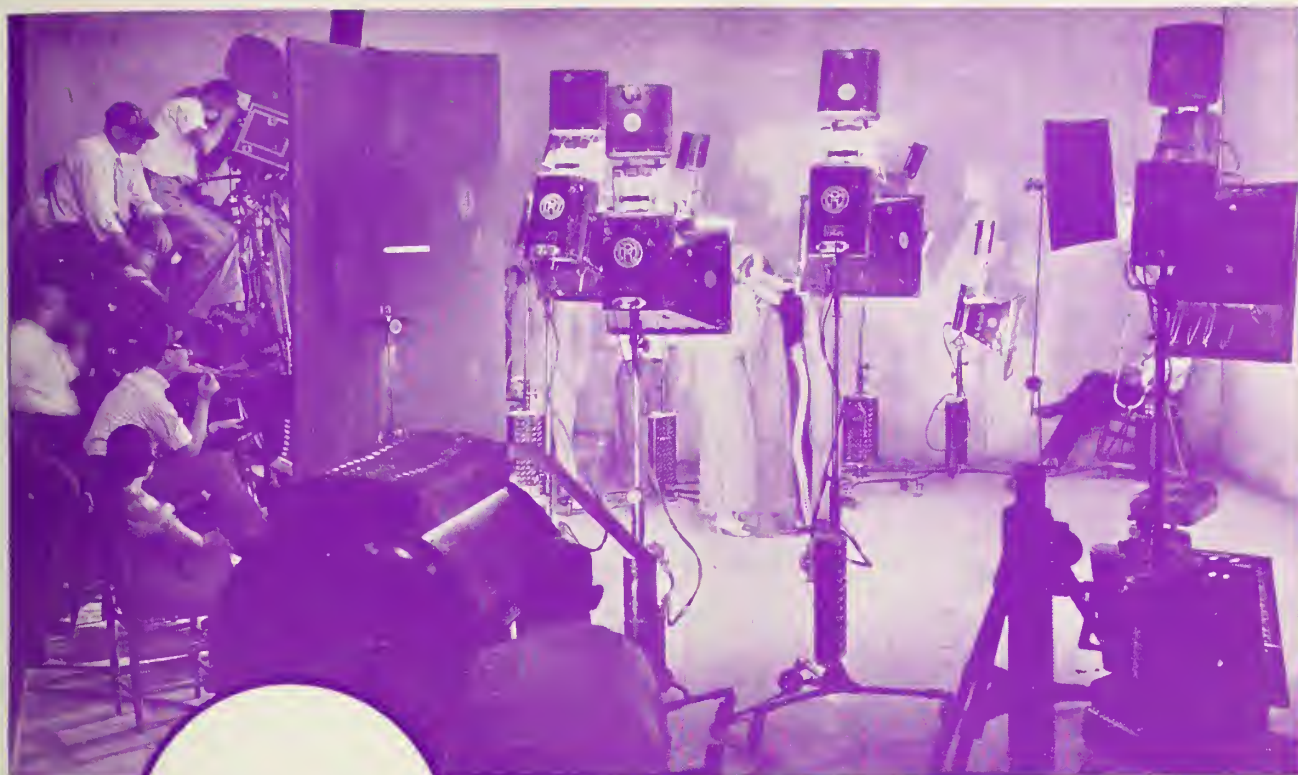
It's a heluva a lot of comfort
To a feller when he's dead,
To have hi-falutin' speeches
Over his carcass said.

It must be a lot of comfort
To a sucker in his grave,
To be all deckerayed
With the flowers some one gave.

It must be a lot consolin'
The nice things people say,
When he's lost his sense of hearin'
Bein' just a chunk of clay.

Yes, the flowers and the speeches
And the tears that's fur him shed,
Are a heluva a lot of comfort
To a feller when he's dead.

Take a tip from me, my comrade,
If you have a rose to give;
Hand it to me when I need it—
Let me have it while I live.



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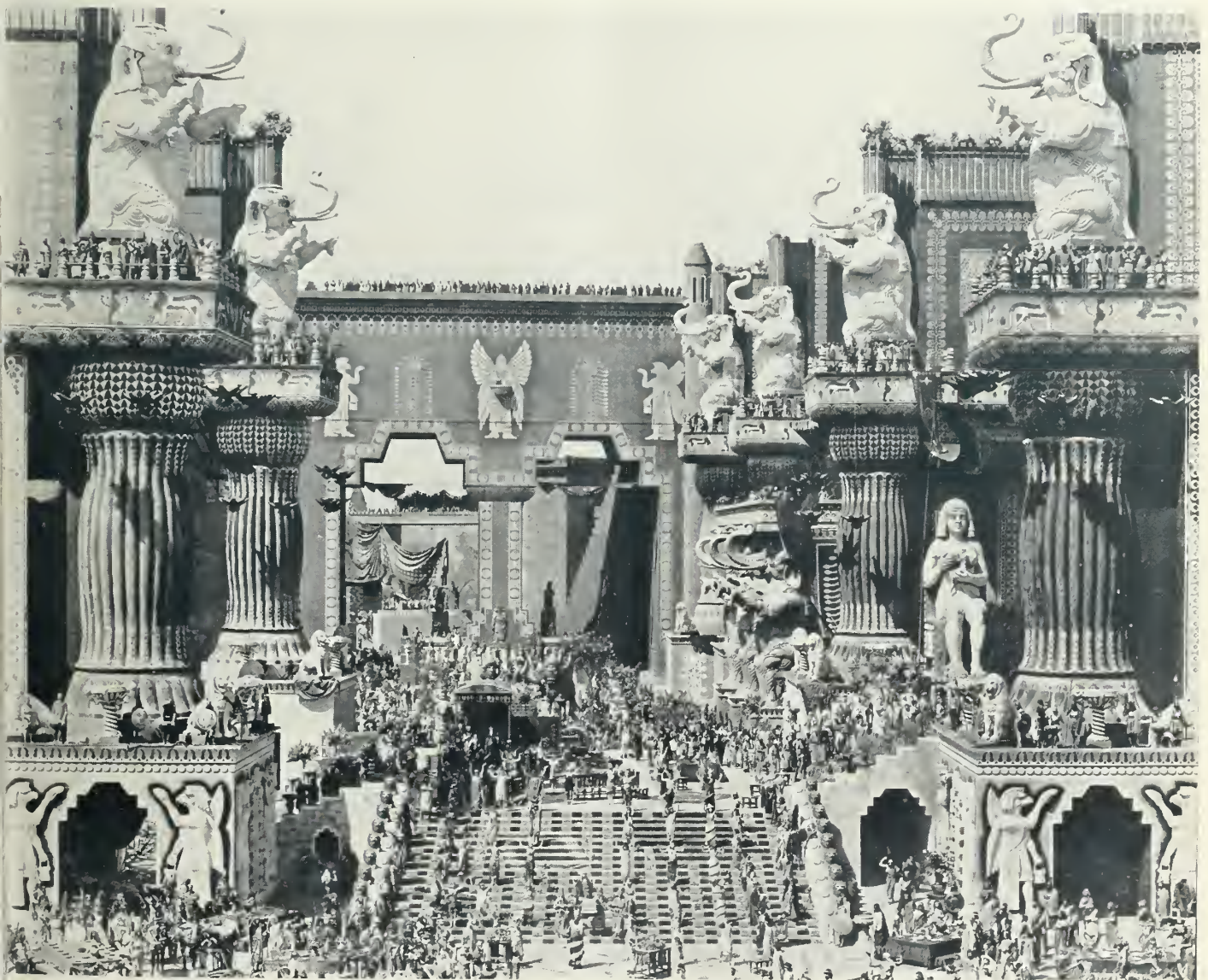
INTERNATIONAL PHOTOGRAPHER

HOLLYWOOD

TH YEAR

SEPTEMBER, 1934

VOL. 6
NO. 8



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APPLICATION OF SOUND EFFECTS TO RADIO BROADCASTING

By R. W. MURRAY,

Broadcast Engineer, Radio Station KHJ

[The author of this article has been connected with KHJ as a broadcast engineer for six years and, as a mixer in their studios, has come in close contact with production of synthetic sound for radio programs. It has been his job to pass on the quality per-

spective and volume of sound effects for radio dramatic shows. He has handled successfully such shows as "Omar Khayyam," "Chandu," "Globe Headlines," "Calling All Cars," "Snug Harbor," "Detectives Black and Blue," "Conquerors of the Sky," and many other dramatic shows too numerous to mention.—Editor's Note.]



SLIGHT technical explanation of broadcast and receiving equipment is necessary before proceeding with our story. Certain sounds when listened to in their natural state—that is to say before microphone reproduction, have a certain quality of tone which may be termed the true or natural tone. This true or natural tone, such as a door slam, is made up of many component frequencies.

In order to recreate this tone or sound at the radio receiver in our homes, the last point of reception, it is necessary that each piece of equipment from the microphone in the broadcast studios to the loud speaker in our homes, reproduce each frequency with the same amount of volume present at the point of pick-up.

Up to the point where the sound leaves the broadcast transmitter this is done very well, but due to the low average frequency response of radio sets in the homes of the listening public, certain frequencies of the original sound are either lost or over-emphasized.

A condition such as poor frequency response in the radio receiver leaves but one thing to do at the broadcasting station, without changing its high fidelity amplifier equipment and that is to produce sound effect unnaturally. This really means they are deliberately unbalanced with regard to their frequency content and volume and are sent out on the air that way (because of the faithful reproduction of transmitting equipment) but when picked up and amplified in the average receiving set, become more or less natural again.

If the receiving set were as good as the broadcast equipment the sound effect would again sound unnatural, so the reader will see it's a sort of merry-go-round and causes the broadcast engineers much trouble.

Even though our whole system of equipment, from the microphone to the receiving set loudspeaker, were a hundred per cent perfect, there are certain effects we cannot produce naturally. Some of these are as follows: A railroad train, a storm at sea, thunder storm, galloping horses, airplanes, automobiles, explosions, effect of an earthquake shaking a building down, man diving in water, and many other effects too numerous to mention. Obviously, it would be disconcerting to run a locomotive through the studio.

Following is a list of the most commonly used sound effects in producing everyday dramatic radio shows: Doorbell, phone bell, fire engine bell, railway crossing bell, sirens of several varieties, stop signal bell, auto horns of all makes, whistles of all varieties, footsteps, door knocks, door opening and closing, breaking in door, rattle of paper of every variety, effect of fire of every description, water effect of every description, cannon shots, gun shots, explosions of all varieties, horse hoofs, wagon wheels, battle effects, armor rattling, swords

slashing, body falling, sound of fist blows, machinery noise of every description, airplanes, automobiles, trucks, motorcycles, machine guns, horse and wagon effects, squeaking brakes, ocean breakers, rain effects, dishes rattling, pouring liquid.

Now for a description of how sound effects are put into a radio show.

Let's take a play such as "Calling All Cars." Here we have a story that is filled with sound effects.

The automobile and airplane effects are usually done with records. One company in the east has a complete library on the market and for sale of practically every sound effect known.

The only disadvantage of recorded sound effect is the difficulty of cueing it in at the proper time on a show.

Let us say that we have a play with three crooks in a room, looking over their loot. They pour the swag out of a bag on to the table. On a word cue to fit the situation the sound effect man pours a bag of nails, washers, etc., on his sound effect table which, when picked up by the microphone at the proper volume, this sounds like a bag of jewelry in the process of being poured on the table.

It sometimes requires a lot of imagination on the part of the production department to get effects that they have never really listened to in real life. Suppose now that the three yeggs are being surrounded by cops and in the course of the conversation, one of them exclaims, "The Cops!"

The listener-in hears a motor car approaching. It's a phonograph record of an automobile being faded in by the mixer to give the desired effect. The mixer drags the turntable to a stop to give the impression of a car stopping, and, at the same time, he gives a cue to the sound effect man in the studio to give a brake squeak. He does this by sliding a piece of plate glass over some gravel.

Three cars of cops are brought into the scene in the same manner.

One of the yeggs may yell: "They're breaking in!" and a little ahead of the cue word the sound effect man is pounding furiously on a prop door. This gives the effect of the door being forced by the cops. The sound effect man then jumps on a light pine box; you hear a crash and the cops come running in—more synthetic sound of footsteps is produced by three or four men running on boards.

Sometimes it takes four or five sound effect men to produce a show where there is a lot of action and at times part of the cast in the play are drafted as sound effect men.

Let us say that our three criminals protest at the

rude action of the cops in breaking into their private quarters and a free-for-all fight takes place. Then we have all the sound effect men busy and part of the cast is ad-libbing with cries and shouts.

One man is busy doing nothing but smacking his fist into the palm of his hand, while another falls on a board to the floor to give the effect of men being knocked down. Still another is busy firing real guns with blank cartridges, or he may be hitting a leather covered cushion with a stick to produce sounds like shots—this is known as the shot pad.

The remaining man is busy upsetting chairs (real chairs are used for this) and when all five men are going full blast it sounds very much like a free-for-all fight to the radio listener. And here it may be said that these effects are rehearsed many times before going on the air; the average play of half an hour is usually rehearsed with sound five or six hours before presentation.

Let's imagine a storm at sea on an old sailing boat. The listener hears the wind howling. This is produced with a clever effect machine—a large cylinder of wood—with a dozen or so ribs about one inch high with a piece of canvas dragging over it. When turned rapidly the cylinder emits quite a howl of wind.

The effect of rain is produced by a special rain machine. It is about three feet in diameter, one inch deep and round. It is mounted about ten degrees off level. A handful of shot placed in the bottom produces the effect of rain when the device is slowly turned.

The effect of sloshing water is accomplished by the use of a hot water bag half full of water and sloshed in front of the microphone.

Next we may require a good squeak in the old boat. A bit of the studio furniture is utilized for this. A straight backed studio chair was found to have a delightful squeak when swayed slowly by the back from side to side.

To get the effect of canvas sail flapping, several pieces of canvas were mounted on a wooden frame; when shaken vigorously in synchronism with the bursts of wind it sounded very much like the real thing. A few squeaky pulley blocks hung on the frame added much to this effect.

One script in the production, "Calling All Cars," called for the bombing of the Los Angeles Times Building. After many hours of trying different stunts for the explosion and wreckage of the building we finally hit upon a combination of effects that sounded real.

First to get the effect of a terrific explosion of an infernal machine such as was used in the Los Angeles Times Building bombing, a board about five feet wide and twelve feet long was dropped on the studio floor. When picked up by the microphone this sounded very much like our own studio had blown up.

To get the effect of the walls caving in, we used about two dozen folding chairs piled high; then at the top of a board that formed an incline were placed five or six dozen piano rolls. Immediately following the synthetic explosion, the chairs were pushed over along with the player piano rolls, and then a large box of debris was dumped on the floor in a pouring fashion.

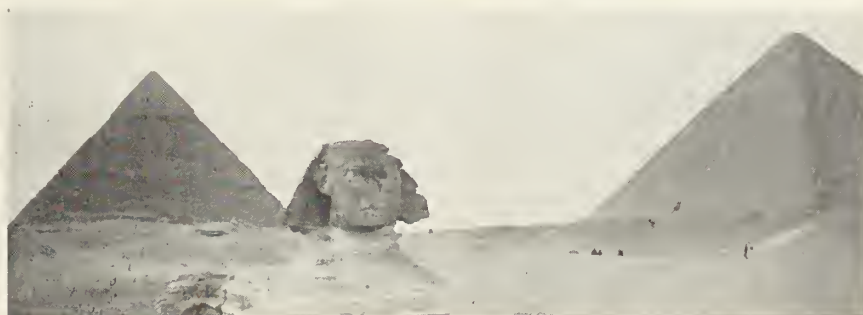
To produce the effect of the fire that followed the explosion and wreckage of the building a large piece of cellophane was crushed in a rotating fashion in the palm of the hands. When all of these individual effects were put together in one scene, the effect was tremendous.

The usual method of producing any sound effect scene such as the Los Angeles Times bombing case, where there are several varieties of sound to be combined, is to try each individual sound for its natural tone, and then balance all sound effects together and listen to the overall effect. All sound effects have to be balanced by the sound effect man and mixer in order to get the proper perspective. A serious sound effect often becomes comedy when not done properly.

The production of shows with sound has also many points of humor. In one dramatic show the hero was supposed to kill a cobra by firing two shots. On cue the sound effect man fired one shot and the next was a fluke. The actor kept waiting for his cue; the second shot, which never came. He couldn't read the lines in the script: "Well, it took two shots, but I got him," so he ad-libbed the next line to meet the situation and saved the day by saying, "Well, I got him!"

In closing let's say that the production of natural sound effects calls for plenty of hard work, time, patience and ingenuity.

"THE ONE GREAT WONDER"



[In the October issue of International Photographer additional information will be published as a follow-up to "THE ONE GREAT WONDER", the editorial printed in our August issue, proposing a permanent world's fair for Los Angeles or San Francisco by the reproduction here or there of the "SEVEN WONDERS OF THE ANCIENT WORLD." Watch for it.—The Editor.]

THE JUNIOR NEWSREEL IS HERE!

(Thinking Back and Looking Ahead)

By RAY FERNSTROM

[The International Photographer enthusiastically congratulates the author, Mr. Fernstrom, upon the big idea offered in the conception of this Junior Newsreel. For more than a year Mr. Fernstrom has from time to time discussed this subject with the Editor,



and the latter feels that our genial and brilliant Scandinavian friend has hit upon an idea that will delight the entire movie world and will also make motion picture history. Mr. Fernstrom authorizes the Editor to announce that he has financed his proposition and will quickly pre-empt the field by active operation.—Editor's Note.]

UDGING by some of the unjust criticism of newsreels, one would think that we who contribute to them never have given a thought to our work—past, present or future. So many people in other branches of picture making are constantly telling us how we should make our reels that, I for one, am inclined to talk back and offer a few suggestions in return.

Returning last week from a few months shooting in Europe, I found the local picture makers trembling with fear at the coals heaped on the heads of producers who make objectionable films, with the result that the future health of the industry looks anemic indeed, unless fresh blood is transfused. This has already happened from time to time in the newsreel and, from now on, the *life* of any picture program may be almost entirely in the head of the show, the leader—the pace setter—the NEWSREEL.

There should be one factor in the theatre, whether it appears on the screen or on the boards, seen or heard, color or black and white—and THAT is—as it always should have been—ENTERTAINMENT.

Everyone finds interesting details in whatever is going on in the world about us and it is the function of the newsreel to bring these DETAILS to the screen in an entertaining manner. THIS the newsreels have always done and are doing so that each issue of a newsreel will be better than its predecessors. With them it is an everlasting struggle for improvement, and they ARE improving, setting a precedent, a course, that others might follow to their own betterment and that of their product.

The infancy of the film industry has been passed, so far as the newsreels are concerned and I venture to say, your newsreels of the immediate future will pack more good movie than ANY feature, unless someone wakes up and catches up.

The handwriting on the wall reads one word—COLOR—and, believe me, real natural color is HERE and here to stay, but do we hear of any features to be made entirely in natural color? At least ONE newsreel—with typical newsreel far-sightedness, is about to be made entirely in color. With this in mind—is there any question as to where we are heading?

Shorts, other than news, are also the vanguard of picture progress contracting the fever from newsreel enthusiasm. More and more will soon be in natural color, the same beautiful photography seen in all Silly Symphonies, Technicolor, brought out of the cartoon rooms into the great outdoors for the first time—stepping out toward the future with bold strides of cheerful optimism. So far these shorts are being carried ahead by the novelty of the lovely color, but the light ahead is getting brighter.

NOVELTY—brings us to the one word that covers almost everything in the show business. There is more DRAW to novelty than to anything else one could put

in pictures. Novelty, that element of *surprise*—that is so rare these days. The stuff our boss, E. Cohen, used to drum into our skulls back in the good old Paramount News days. "Every scene should be a surprise to your audience," he'd say, and we've been trying to do that ever since. Of course, novelty is difficult to get, but look to your newsreel for novelty and, sooner than you expect, you will find it and perhaps it will give you something that is "news" among picture ideas, if that is what you seek. If not, you might as well fold up the tent and travel—which gives me an idea.

"Get the Children Back into the Movie Houses!" seems to be the hue and cry of picture people today. Children have been rather neglected in the past as far as drawing them into the theatres with pictures "turned out." As for getting them back, that calls for a complete about-face, not just a collection of syrup shows. Kids are too smart today for sugar sweet stuff. These young people from five up are so much more intelligent than we were at their ages that we have a job ahead catching up with them. We cannot try to make stuff that we would have enjoyed at that age for they do not like the same stuff now that we did then.

Kids want NOVELTY—SURPRISE—NEW—and NEWS—ask them and see if I'm not correct in this conviction. And if you *get* the kids you *draw* the grown-ups, for they too are trying to keep up with this new generation.

To understand these youngsters of today you have to raise a few of your own and learn from them how they and their little playmates think, before you can make pictures for them.

We may not be able to do it—it may not come before a few of them have grown up and replaced us, a few who are of their generation and of their advanced intellect. The only course ahead is for all of us to work together, study our children and try to find what—just what—will entertain them. We cannot go back too much to the stories of the past, for even these will not hold this coming generation for long. These youngsters are looking ahead, while most of us oldsters are thinking back.

One sterling example has been set so far that seems to hold the youngsters—the Silly Symphonies, by Walt Disney, the guiding light of the industry. His pictures have novelty, surprise, color; is it any surprise they are NATURALS?

If all of us knew modern child psychology as Disney and his staff do, there would be a real future for us and the kiddies would line up outside the picture houses with parallel lines of mothers and daddies.

The Great American Family has too often been forgotten when pictures have been planned.

The idea referred to above pertains to the drawing power of novelty, and to children, and pictures for them. It keeps in mind the American Family, from mother to

babe, uses a little of Disney's child psychology and a little of the kids' love of make-believe, but without artificiality. Kids love color, so all my ideas are intended for color photography. They enjoy funny sheets, especially Sunday color sections. A large measure of success of Disney's Symphonies undoubtedly came from his good judgment in using color, in addition to the novelty appeal to both eye and ear.

Kids love to travel, go places and do things. As a next best thing they make believe; if they can't go to sea they make toy boats, but different boats, better ones, with motors; better by far than when we were kids not so long ago.

They cannot fly YET, but they build mighty good models, many of them perfect, that DO fly. Can we?

And so—back to the IDEA. We take four words:

TRAVEL—which means action, far places, novelty, comedy.

CHILDREN—children all over the world—and take a couple of American kids with us on a tour of the globe—that can serve as a make-believe trip for the kids in our audience.

COLOR—children visualize everything in color, so how can we do other than take their tip and that of Walt Disney?

SOUND—little French children speaking in French in answer to our little Americans speaking English, for example.

Put them all together and you start a series of Travelogues that should please any child, adult of any age and any language, anywhere. No one knows how the other folks live, on the other side of the world. We have seen plenty of travel pictures, streets, people, the same old stereotype stuff, but have we seen how they LIVE, PLAY, go to SCHOOL, EAT, SLEEP, AMUSE themselves?

By carrying our two little American characters we contrast and compare ourselves with children of other lands and open opportunities for unusual action, that is ever natural. All we have to worry about is the story continuity.

If you agree that Color Travelogues for children are a drawing card, why can't we go into this further?

Why not a children's NEWSREEL—A JUNIOR

NEWSREEL?

This idea came to me several years ago as I watched a group of young Scandinavians play football in a Stockholm schoolyard. If only our young Americans could see those boys kicking the ball around, never touching it with their hands! Football is played in schoolyards the world over, but never quite the same. The contrast lends novelty to the interest in boys of other countries. The more I traveled and observed, carrying the idea in mind, the more I became convinced that here was another NATURAL.

There are enough interesting events taking place in the world—things of especial interest to youngsters, and those who stay young, to keep a series of this sort rolling for years—material that the senior newsreels never cover because of the lack of spot news flavor to such happenings. The novelty, the action, the human interest, the ENTERTAINMENT is there in heavy portions.

If there was not such an impregnable wall against a major theatre chain release by an independent I should make these myself, but since the wall cannot be climbed by one of my short stature, I can only toss this note to those who live within the hope that it may help to bring such pictures to the youngsters whom I know will love them.

As for full length features, look to such as "Little Women," although they are hard to find. A few such as the stories by Selma Lagerlof and, by the way, did you hear "Robin Hood" on the air the other night? Imagine that in Technicolor!

In closing may I point out a startling example that carries its own moral? Sometime ago my friend, John W. Boyle, made a feature length travelogue in Europe, entirely in color. It contained novelty from start to finish, in addition to the novelty of color. No major distributor could see the entertainment value of such a film, because it was DIFFERENT. Now that John has road shown it, this one picture has received finer press and church notices than any film ever produced. Here is such a feature as might well follow a program of Silly Symphonies and give audiences, children and grown-ups alike a really different entertainment experience, but we run smack up against "block booking"—and there my story ends.

EASTMAN SCORES WITH THE NEWEST FOREIGN TYPE MINIATURE KODAK

The newest foreign-type miniature Kodak, which takes sixteen pictures, $1\frac{5}{8}$ by $2\frac{1}{4}$ inches in size, on an eight-exposure roll of 620 film, has just been put on the market by the Eastman Kodak Company.

The sixteen prints from a roll of film exposed in the Kodak Duo Six-20, as the new camera is called, are large enough for an album, a letter or a pocket. The availability of Panatomic Film, with its fine-grain characteristics, in the 620 size for use in the Duo Six-20 will accommodate also photographers who wish to make sizeable enlargements from their negatives.

The Kodak Duo Six-20 is extraordinarily compact for a camera taking pictures of the size described, its longest dimension being actually less than that of a Vest Pocket Kodak. Like the Kodak Vollenda and the Kodaks Six-20 and Six-16, the front of the Duo Six-20 springs into rigid picture-taking position at the touch of a button.

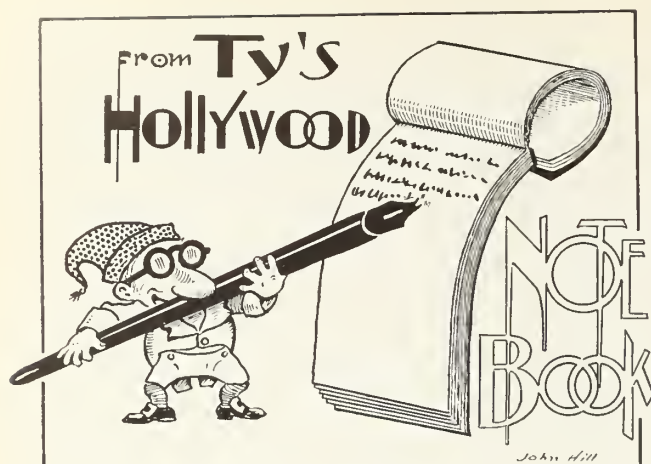
The Duo Six-20 is equipped with a Kodak Anastigmat f:3.5 lens and a Compur shutter, which are set in a spiral focusing mount controlled by a lever. The lens is of 7 cm. focal length. The shutter has eight speeds,



ranging from 1 second to $1/300$ of a second, with bulb and time.

The red windows have a slide cover for light protection when panchromatic film is used. There is a collapsible direct-view optical finder, beside a depth-of-focus scale.

In appearance, the Duo Six-20 has the popular beveled ends and etched metal side panels of the present modernistic trend. Price, \$52.50.



By EARL THEISEN

TALKING about fan letters, the letters pour into Hollywood from all over the world, from persons in all walks of life. These letter writers, not content to write letters of appreciation, instead look upon the film star as an outlet for their pent-up yearnings. All their frustrations that are not exhausted in a vicarious dream in the theatre itself are spent on the star in a letter. They lavish their innermost wishes, their confidences, their disappointments—every conceivable request comes to the film star.

These letters usually start with praises and sugary admiration and end with a request for a free photograph or perhaps discarded clothing. The request is not always for the discarded clothing; they ask for autos, for new saxophones, for an autographed rib from Mae West's corset or for the hand of the stars in matrimony. And that is not all.

One player was besieged with requests from a fan in Atlanta, Georgia, for a button from his vest. The letters came so persistently that finally in despair the player sent the button.

A Bing Crosby fan recently wrote to Evelyn Venable asking her for a photograph of herself autographed to Bing Crosby: Reason: The fan was making up a scrap book for his "Bing" and wanted the Hollywood tribe to contribute.

Another celebrity sometime ago was besieged with letters from a woman to please come home to his children. They were hungry; they were crying for their father. The letters kept coming, so, of course the thing was investigated. The woman was found to be a poor old demented colored lady. The crying children were delusions.

This same star received a number of letters from another fan, a crank, demanding \$25,000. The letter stipulated that the star must bring the money in person and be on the corner of Eighth and Main Streets, in some little town in Maine, on such-and-such a date. If he did not show up the fan was going to be mad at him.

Some of the letters are pathetic. There was one that John Lodge, at Paramount Studios, could not resist. It was from an old man. The oldster had dreamed all his life of having a silk hat; but never could afford one. His money had gone for other things—raising a family who needed little shoes. His heart wanted a silk hat and he didn't mind if it was a little battered. John Lodge and Claudette Colbert, who was shown the letter and insisted on helping, went in together and sent a spanking new topper for the old man to show at his lodge.

Usually the requests for clothing are never answered

because, if one request were granted, a deluge of such requests would follow.

Another letter recently sent Sylvia Sidney was from a young man who had many virtues which he enumerated in detail. He requested that Sylvia Sidney find him a beautiful wife who could support him. In fact, he added, he would even consider Sylvia herself.

Still another female star who is not to be mentioned received a letter full of male salesmanship. He ended the letter with a caution not to throw the letter in the waste basket because it would cause a fire.

Recently Carl Bronson's hat was stolen. It was returned cut into innumerable pieces with the request that he autograph each piece and return them.

Claudette Colbert received a dubious compliment when a Mid-Western farmer wrote to tell her that his pet cow, which had been named "Claudette" in her honor, had just given birth to a pair of calves. Would she please name them?

These film folk are asked to christen babies, horses, boats, and what have you.

Every day these requests come, most of which, for obvious reasons, cannot be granted. They cannot furnish every request ranging from a shoe buckle to life companionship.

Sometimes they are funny, often pathetic, and a star is tempted to comply; but the fear of a deluge of such requests keep the letters from being answered.

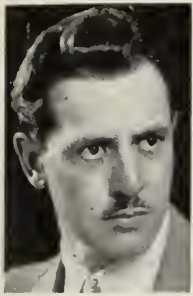
How many persons are involved in making a motion picture? Believe it or not, as that fellow would say, in the making of Columbia "Broadway Bill" some patient person figured it out and the figures say 16,461 persons and a rooster and a horse. Fifteen thousand were extras, but that still leaves quite a few people. Do you realize the number of persons that must add their touch to the picture after it leaves the studio's production departments? There is first the laboratory, with its large staff, the exchanges, railroad expressmen and delivery boys, theatre operators, inspectors and censors. Look at the number of censors alone.

Headlines say Robert Woolsey is nursing birds. According to R. K. O. publicity department Woolsey can be seen each morning with a ladder outside the publicity building, climbing to a tree branch with a medicine dropper, some sugared water, a hard boiled egg and a toothpick in his hand. He uses the toothpick to hand the egg to a nestful of fledgling mocking birds whose home is in the tree. Woolsey says he will watch over the birds until they start mocking him.

Receiving a hurry call from Director Philip Moeller for a certain type, Mickey Owen, an assistant casting director, hurried to the set to get the details. The director, at sight of him, decided he was just the type, so regardless of objections Mickey Owen isn't "casting" now.

Joan Crawford has her sixteenth known namesake! The sixteenth one is the daughter of Katherine Albert, a magazine writer. Joan did the honors with a complete layette that she knitted herself between scenes in "Chained," her latest picture.

How pleased the persons must be who ask Gene Raymond for an autograph. Gene Raymond always asks for an autograph in return.



ELEMENTARY PHOTOMICROGRAPHY

By KARL A. BARLEBEN, JR.,
F.R.P.S.

DID you know that any camera can easily be used to make photomicrographs? Yes indeed, all you need is a camera and a microscope—plus a little common sense—and photographs through the microscope become an accomplished fact. All you have to do is to set the lens of the camera for infinity focus, place the camera directly over the microscope, the camera lens close to the eye-piece of the microscope, and there you are.

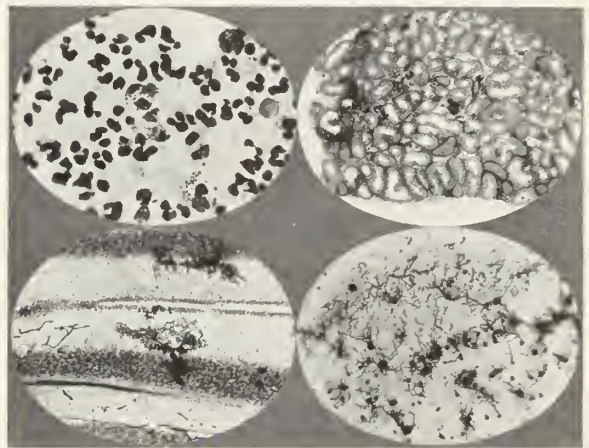
Photomicrography is rare among amateur photographers, possibly because it all seems so tremendously technical and complicated. It is when considered from the laboratory or research standpoint, but the amateur seeking a bit of diversion with his camera need not fear complications, for as far as he is concerned, the work is delightful and simple.

Assuming a camera is available, the first consideration is naturally a microscope. There are numerous models, types and makes available, and it is a pity that more Americans don't take up microscopy as a hobby, for it has a certain fascination all its own. In Europe a microscope in the home is almost as common as a camera—but we started out to discuss photomicrography. Any microscope will do for amateur purposes, but obviously the better its objectives the more can be done in photography. Simple compound microscopes which may be had within a price range of ten to twenty-five dollars are to be seen in various optical and department stores and come from the factories of well-known firms such as Bausch and Lomb and Wollensak. Jumping up the price scale a bit we come to standard laboratory and routine outfits like Bausch and Lomb, Leitz, Spencer, and Zeiss. These may be had for from approximately somewhat more than one hundred dollars on to what you may be able to afford. Less expensive standard microscopes may be had for considerably less, but these do not possess the refinements of the more expensive outfits. For example, Leitz offers several models of precision microscopes equipped with the standard "society thread" which accommodates standard objectives. These 'scopes cost between fifteen and twenty-five dollars and are a worthy investment because of their standardized features.

Now as to the camera. As has already been mentioned, any camera may be used. True, there are special and expensive cameras for this sort of work available—but these are for the laboratories and the amateur need not think that he must have similar equipment in order to produce good photomicrographs. Two methods are open to the amateur photographer. He can remove the lens from his camera and the eye-piece of the microscope and make his exposures with the limited optical equipment, or, if his camera does not permit the removal of its lens, he can set the latter at the infinity mark and place it directly over the eye-piece of the microscope. In both cases, results can be expected.

It is interesting to note that in several instances there is special equipment available to facilitate the work and broaden the scope. Owners of the Leica and Contax cameras, for example, can purchase special equipment which makes a definite connection between camera and

'scope. With these accessories, the camera lens and microscope eye-piece are dispensed with, the accessories taking their place. Beam-splitters, focusing tubes, and special shutters are incorporated in the accessories so that not only can the owner photograph inanimate specimens, but living ones as well, for the focus can be carefully adjusted as occasion demands by means of the focusing tube and beam-splitter. At the precise moment the focus and position of the living specimen is favorable, the shutter is released—this is done at the same time the beam-splitter is automatically moved aside for the full intensity of light to pass through onto the film (or plate) in the camera.



A few examples of photomicrographs made with the Leica camera and Micro-lbso attachment. Leitz microscope used. Photos Courtesy E. Leitz, Inc. Barleben.

Only recently the Bausch and Lomb Company announced a simple, effective, yet inexpensive outfit complete, including camera and microscope. The microscope is their new model R, and the camera, a special box-device which is entirely practical for amateur purposes. In short, this new outfit can be purchased complete, ready to use, as all the necessary connections are either built in the instruments or included with the outfit. I predict that this outfit is going to make a good many young amateur photographers and microscopists happy, for its price is well within the reach of all.

When using the simple camera and microscope, the hook-up will depend upon the type of instruments used. The principle involved consists of supporting the camera directly over the microscope. This must be done substantially, for vibration should not be permitted to exist at any part of the unit. Some workers who do not indulge sufficiently in photomicrography to make the purchase of special devices practical use an ordinary "ring-stand" such as is used by chemists. It is a metal platform from which stands a metal rod. A clamp is easily made that will screw into the tripod-socket of the camera and also clamp firmly to the upright of the "ring-stand," thus supporting the camera at the proper height over the 'scope. A temporary stand for the camera—yet one that is not at all recommended—can be produced by piling books, one upon the other until the front of the camera can be laid upon the uppermost in such a fashion that the lens contacts the draw-tube of the 'scope. Such an arrangement is decidedly unsteady, and hence

is not recommended. However, in this matter each amateur must work out his solution, for every make and type of camera presents a different problem.

Naturally, light must be excluded at the connection where the camera lens and 'scope eye-piece meet. In temporary cases this is easily accomplished by wrapping black cloth around the connection several times so that no light is permitted to enter except that which is intended to traverse through the microscope from below. Or a tube can be rolled from stiff cardboard which snugly fits over both lens and eye-piece. A special "adapter ring" is available for the Leica camera which is placed over the eye-piece of the 'scope and fastens to the lens by means of a set-screw. This makes a perfect connection and should be considered by all who own a Leica.

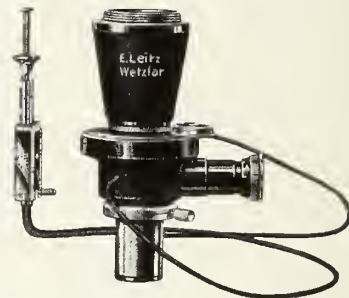
Illumination we must have for our exposures. Just what type and how much is again a matter for the individual worker to decide, for conditions will vary greatly in each case. The most satisfactory type of light is of course the carbon arc. A number of excellent microscope arc lamps are on the market, should the amateur care to go into this work sufficiently to make their cost worth while. An arc lamp can be made, using small "pencil" carbons and drawing only a few amperes, but the beginner had best pass this type of illumination up to begin with, anyway. The tungsten type of light seems to have every desirable feature—intensity, safety, and low cost. A lamp of about 100 watts will work nicely. It should of course be contained in a well ventilated lamp house to insure a concentrated light source at the microscope mirror. Lamps of less intensity are likely to cause the exposure to be unnecessarily long.

It is necessary to see that the light is striking the microscope mirror squarely, and that the mirror is adjusted so that the utmost illumination is secured on the specimen. In the vast majority of cases, the microscope must be focused visually, then after focus has been carefully established, the camera is placed over the 'scope for the exposure. Because of this, inanimate specimens only can be attempted (except in the case of the special Leica and Contax attachments referred to previously).

The choice of sensitive material (film or plate) should be given careful consideration. For simple subjects, a fine-grain orthochromatic film is suggested. If it is fast, all the better, for exposures can then be shortened considerably. If the specimen is stained—and most microscope slides are—a panchromatic emulsion is indicated. Two factors should be kept in mind as far as the emulsion choice is concerned: speed and grain. Speed is highly desirable to cut down exposures, and fine grain is necessary for small negatives, which are usually used for photomicrography, because enlargements will subsequently be made. Contrast is another desirable feature if it can be had in combination with the other requirements, for it assists splendidly to bring out the tiny details in the enlargement. Amateurs who possess miniature cameras which use standard 35 mm. cinema film will find in

DuPont Micropan and Eastman Panatomic two ideally suited films for their purpose. Roll film camera owners can use the Eastman Panatomic without hesitancy. Agfa Plenachrome or Superpan cinema and roll film are likewise excellent. So are Perutz Neo-Persenso and Peromina, Selochrome, Gevaert Panchromosa, Voigtlander—but why go on? Each amateur has his pet films to work with, and all are good.

As for exposures—ah, that is a mystery. It can readily be understood how impossible it is for anyone to expect to guess the exposure—or expect anyone else to. As each condition is different—light source, type of light source, microscope, type of objectives and eye-pieces, magnification, specimen, color of specimen, and type and speed of emulsion—it can be seen that there is but one accurate method of learning the correct exposure to give—make a test strip of a series of exposures, each at a different exposure. On developing this test strip it becomes easy to note which exposure is the properly exposed one. This one, then, is the guide, and on referring



Micro-Ibso attachment for coupling Leica camera to microscope.

to the notes made while the test strip was being exposed, we know just how long to expose for. Once a few such tests have been run off, the amateur can readily judge for himself the correct exposure in future work. There is such a thing as using an exposure meter but the results are not always reliable nor constant, hence the test method is by far the most satisfactory, if a bit round-about.

These few words are written merely in an attempt to interest the amateur photographer in coupling his camera to a microscope. For further suggestions, the reader is referred to various books and pamphlets on the subject. The Eastman Kodak Company has a dandy for fifty cents. Be sure to get a copy.

No one should hesitate in these days of enlightenment to make bold explorations with his camera, large or small. The camera can be used for so many fascinating activities that it seems strange that ninety per cent of the camera owners confine their photographic activities to the usual run of snap-shooting. The camera as an instrument is capable of far more, and it would appear that the amateur is cheating himself by not using his camera to its utmost capabilities.

SPECIAL MODEL LEICA CAMERA

The new model FF Leica is being announced by E. Leitz, Inc., 60 East 10th Street, New York City. The model FF Leica is basically the same as the famous model F excepting that the film capacity is 33 feet (enough for 250 exposures instead of a little more than five feet in the regular Leica, giving up to 36 exposures). Aerial photographers will welcome this new model, for it eliminates the need for reloading after every 36 exposures. Natural color photographers will find it of great value in their work, for it permits a greater range of pictures to be made without opening the camera. It is likewise useful to press and candid photographers, for often they are required to make a complete series of pictures in rapid succession without time to re-load

shorter lengths. For copy work, the model FF is without a peer, for its film capacity permits the copying of many pages successively without interruptions. In short, the model FF Leica is ideal for all photographers who have need for making more than 36 exposures per loading.

The new Leica model possesses all the features of the model F Leica, slow shutter speeds, magnified range finder, etc. Two film magazines are used, thus making it unnecessary to rewind the film back after exposure. Any of the Leica lenses are interchangeable on this model. Accessories include an Eveready case, special film trimming guide, and spare magazine.

Circular 7454 describes the new model FF Leica. A copy will be gladly sent to all those requesting it.

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WHAT

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WHO'S
WHO

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SERVICE



"CITY OF NEW YORK". Photo by E. T. Howell.

Leica Camera. Stop: f:9. Shutter: 1/60 sec. Filter: No. 2.
Film: Eastman Supersensitive Panchromatic. Developer: Buffered
Borax. Paper: Eastman Portrait Proofing.



GFACOLOR 35 mm. Lenticular-Base Film:

This film was first available to the European photographer, but has recently been introduced to the American miniature camera enthusiast. It does not usher in a new method of making colored photographs, the principle involved being the same as that employed by the familiar Kodacolor system of 16 mm. motion picture photography.

This process is of the additive type, the film itself containing no color but a black and white record of the various hues of the subject. On projection through a suitable filter the subject appears in full color.

The entire process is dependent upon a unique film whose base side has been embossed with thousands of minute cylindrical lenses. This film is loaded into the camera in the opposite fashion to normal—with its base side towards the lens. It is supplied in the usual Agfa container obviating the necessity of loading it into a magazine. About eight inches at the start are blackened as a light protection, and it is necessary before taking any picture to make three blank exposures to take up this blackened portion of the film.

The second item necessary to this system is a special color filter on which the three primary colors of light are represented in bands. The Kodacolor filter contains but three bands, each of which is composed of one of the primary colors of light—red, green and blue-violet. The Agfacolor filter is divided into five or more bands, to balance the coloration, and to obtain a more even diffusion of the colors.

The filter is mounted on the lens so that these bands are in a horizontal position, and this position must not be altered. In order to focus it is therefore necessary for the lens to be provided with a mount in which the front ring does not rotate when focusing. Another obvious characteristic the lens must possess is correction for chromatic aberration.

MINIATURE CAMERA PHOTOGRAPHY

Owners of the Leica camera can avail themselves of this color system by the acquisition of either the Hektor f:1.9, or the Summar f:2 lenses, and the necessary filter. The Summar possesses an extreme degree of correction for color. Carl Zeiss offers the Color Tessar f:2, or the Sonnar f:2, and Agfacolor filters to fit these lenses, for use with the Contax camera.

The lens diaphragm remains wide open, exposure adjustment being accomplished by varying the shutter speed. If the diaphragm is closed down it will cut off the bands of the filter unevenly, interfering with the correct reproduction of the colors. A lens of the Leitz Summar type is an exception, for it is provided with an octagonal shaped diaphragm which cuts off the bands of the filter evenly. The diaphragm of this objective may be closed down when used with the Agfacolor process.

The exposure required is about 15 times greater than that necessary for an ordinary orthochromatic film.

As was mentioned before, the filter is mounted on the lens with the color bands in a horizontal position, this being necessary so that the bands are in the same position relatively to the minute lenses on the film.

In order to simply explain the method in which this process works let us assume we are photographing an object having a single color—green. A filter allows light of its own color to pass through it, and retards the other colors, therefore light reflected from the green object passes through the green portion of the filter, but is held back by the bands of the other colors. The film as you remember is placed with the base side containing the minute lenses towards the lens, so that each minute lens on the film will form an image of the bands of the filter on the emulsion directly behind it. On development of the exposed film the minute band behind each cylindrical lens representing the green band of the filter will be dense, whereas the portions of the emulsion representing the other color bands of the filter will not contain any developed silver, since they have not been affected by light.

The film is reversed, that is the developed metallic silver is dissolved away, the film exposed to light and again developed, the result being a positive. In this positive all the minute bands representing green will be clear and the rest of the film will contain dense deposits of silver.

In order to view Agfacolor pictures it is necessary to project the films through a similar filter as was used in taking the pictures, with the exception that this filter is corrected for the artificial light of the projector. As the light passes through the film to the lens of the projector, each minute cylindrical lens on the film will project the image behind it so that each small band will pass through its corresponding band on the filter. In our case only the small band on the film representing green will be clear, so that light will pass only through

the green portion of the filter, with the result that the picture on the screen is green.

The unique feature which the Agfacolor film possesses precludes the necessity of extremely careful processing. Formulas are supplied by Agfa and these should be carefully compounded. It is advisable to use apparatus such as the Leitz developing drum, which is a cylindrical glass drum around which the film is wound and attached with clips. The drum is set upon two metal uprights and placed over a tray containing the solution. A small handle is provided for rotating the drum. Carl Zeiss also supplies developing apparatus for the color film in the form of a special developing frame.

The formulas for processing Agfacolor film are as follows:

Developer for Agfacolor Film

Motol	- - - - -	200	grs.
Sodium sulphite (anhydrous)	- - - - -	3½	ozs.
Potassium bromide	- - - - -	85	grs.
Water (85° to 95°)	- - - - -	31¾	ozs.

The chemicals are dissolved in the order given.

After cooling add:

Ammonia (sp. gr. 0.91)	- - - - -	1	oz.
Hydroquinone	- - - - -	62	grs.

Dissolve in 3½ ounces of water.

For use mix one part of the above solution with 5 parts of water.

Development in the above developer is 4 minutes. The film is then rinsed for one minute in running water and placed in the following reversing bath:

Reversing Bath

Potassium bichromate	- - - - -	1¾	ozs.
Sulphuric acid (concentrated)	- - - - -	3½	ozs.
Water	- - - - -	35¼	ozs.

Add the sulphuric acid slowly to the solution of the bichromate which should be quite cold.

For use mix one part of stock solution with 10 parts of water. The film is placed in the reversing bath until all the silver has been bleached out, which will take about 2 minutes. It is then washed for 1 minute in running water. After being in the reversing bath for about 1 minute the film can be exposed to bright light.

The film is now placed in the developer used before for its final development, which will take place in about 3 minutes. This operation is carried out in bright light. The film is washed for about 2 minutes and then hung up to dry, all excess moisture being removed with a moist chamois skin, viscose sponge, etc.

All the above processing solutions are used at a temperature of 65° F.

It is recommended that the film be treated with Agfa-color varnish after it has dried. It can then be cut up into the individual pictures, and the latter mounted between the regular 50 mm. cover glasses, the mattes being mounted on the outer surface of either of the glasses.

D-76 Fine-Grain Developer: Despite the fact that paraphenylene-diamine formulas are greatly in vogue many photographers still prefer to use the D-76 formula for general work in which extreme enlargements are not required. Such photographers will be pleased to know that this formula is now packed in a ready-to-mix form containing the various chemicals in the required quantities, merely necessitating their solution in water. It is offered in different sizes of cans making 1 quart, ½ gallon, and 1 gallon of developer, respectively.

Eastman has also recently announced a new alkali called Kodalk, possessing the following characteristics and advantages:

By AUGUSTUS
WOLFMAN



1. It is more alkaline than borax and slightly less than carbonate.

2. It does not contain carbonate, does not evolve a gas in contact with acid, and therefore cannot produce blisters.

3. The degree of development and the time required to obtain a desired contrast may be modified by varying the amount of Kodalk in the developer.

4. The life of the average potassium-alum fixing bath is extended because Kodalk developers have much less tendency than carbonate developers to precipitate an aluminum sulphite sludge in the fixing bath.

5. Kodalk dissolves readily and does not tend to cake when added to the water.

6. It keeps satisfactorily in a well covered container. The modified D-76 formula in which Kodalk is substituted for borax is known as the DK-76 formula and is as follows:

Developing Formula DK-76

Water (125° F. or 52° C.)	-	16	ozs.
Elon	- - - - -	29	grs.
Sodium sulphite (dessicated)	-	3	ozs. 135 grs.
Hydrochinone	- - - - -	73	grs.
Kodalk	- - - - -	29	grs.
Water to make	- - - - -	32	ozs.

Dissolve the chemicals in the order given.

Over-exposure and Sharpness: Many photographers follow the old reliable rules, "Expose for the shadows and let the highlights take care of themselves," and "When in doubt over-expose." These golden rules have on many occasions aided the photographer in obtaining a suitable negative of the subject. The modern emulsion has considerable latitude and can stand quite a bit of over-exposure and still yield a negative replete with detail. However, we still insist that there is no substitute for a reliable exposure meter, and one should always be employed, for slight over-exposure may aid in obtaining detail in the shadows, but considerable over-exposure has its evils. One of the things it is detrimental to is sharpness.

The emulsion contains many layers of silver grains which can be reduced to metallic silver, the amount of reduction being dependent upon the exposure the film receives. Let us assume that to produce detail in a shadow it requires but one layer of silver grains. Instead the film is given an amount of over-exposure which will cause five layers to be deposited. The effect is the same as if one were to look through a fine mesh material. As successive layers of the material are added the greater is the diffusion of the light. Definition also suffers due to diffraction. It is always best to employ an exposure meter, and if in doubt over-expose but slightly.

The Eastman Interval Timer Model B: Miniature
(Turn to Page 29)

THE IMPORTANCE OF BEING A DIRECTOR

By RICHARD L. BARE

[Mr. Bare, Supervising Director, Department of Cinematography, University of Southern California, has just completed producing and directing the two-reel 35 mm. picture of Edgar Allan Poe's story, "The Oval Portrait," for which he was awarded the Paul Muni Plaque of 1934.—Editor's Note.]

DISREGARDING the unsurmountable barrier which lies between the making of a professional picture and the making of a non-professional one, the director is, or should be, the supreme mainspring which motivates the clock-work of production, no matter whether he is hired to guide the destinies of the stars of Magnanimous Pictures Corporation, or whether he, for the pure and simple fun of it all, undertakes to masterfully dominate the personnel of the Backyard Players Productions.

Accordingly, no matter whether it was filmed by the professional studio or by the backyard crank-turners, if the picture turns out to be another "lemon," it is the director who inevitably takes the blame. But if, on the other hand, for some unevident reason the picture is a howling success, everyone from the prop boy to the producer steps out and takes his bow. As for the director, well, he was paid to direct the story and he did it.

But this is not a weeping towel for abused directors. Nor is it an exposé of the cruel, unjust methods of the art of producing pictures, as a warning to amateurs.

It is a symposium on The Importance of Being a Director . . . if any.

To begin with, let us venture to set forth that the smaller the picture and the less pretentious the production methods employed, the more important the director becomes, relatively, of course. This is laid to the fact that more duties are placed upon his shoulder, and not, as might be expected, to the fact that he receives more glory or salary. When a director becomes important (I mean to the success of the picture) it is usually accounted to the fact that there has been a decided unification of ideas, together with a distinct centralization of directorial control, and a strict adherence thereto. This may sound a little strong, but I am convinced that it is the sane and logical approach to the method which results in the intelligent and congruous motion picture. Briefly, it is the understanding of the author's idea by the director, the imparting of this original unadulterated idea to the actors by the director, and the recording of this same unified thought by the cameraman as the director sees them. The contribution of the film editor will be discussed later.

The camera should be as much the tool of the director as it is of the photographer. The director and the cameraman should co-ordinate their functions almost as one. The futility of the separation of director and cameraman is evident when the director strives for a certain idea to be brought out by camera treatment, which is lost simply because the director's ideas were not made plain to the cameraman. Not only that, but many times because the director is not familiar with the

technicalities of camera work, he does not realize that the camera is recording the scene in a manner different from the way he sees it. After all, the camera is the supreme medium by which the inherent thought of the author and director are transferred to the audience, and if the director doesn't understand his medium, naturally a poor picture will result. A thorough background of cinematography is necessary for the director who desires to become a good director.

And more than ever does this apply to the amateur director. For he is the "important" director, as usually he is practically the whole staff. The person who knows most about picture making is almost invariably chosen to be the director on an amateur production. Many times he is the cameraman also, and here is where he has a splendid chance to unify the directorial and camera departments. But the more the amateur film director knows about camera work, the better his story will be directed. Know your medium with which you work. A carpenter would not begin to build a house before he discovered what his hammer and saw were for.

Let us suppose that the members of the Backyard Players Productions are assembled for their weekly meeting and the call for new business takes them into the discussion of their forthcoming production. By way of getting started immediately, the group selects the president as director because it was he who wrote the script, and didn't he know more about the whole business of movie making anyway? Right here is where the group makes its wisest selection; that of choosing the author of the story to be the director. The first obstacle is removed before the picture starts. At least the writer and director will co-ordinate and the ideas will be unified. Next, there must be the camera staff and, for the sake of convenience, we will not have the director be the cameraman also.

From here on the director takes immediate supervision over the picture. If the director hadn't happened to be the author of the story, his first duty would be to spend plenty of time reading the script and becoming thoroughly familiar with it. But, since he wrote it, he has the story clearly in his mind and so he turns to other duties. Perhaps the cast has already been selected by the executive body of Backyard Players Productions, but if not, the director arranges for try-out and even a screen test, if the players' photographic possibilities are in doubt. Whatever the director does, he should not cast the story until he is positive. And there are three things to bear in mind at try-outs: How the actor photographs, his or her natural acting ability and what



The production staff of the U. S. C. picture, "The Oval Portrait" during filming of interior sequences at Metro-Goldwyn-Mayer Studios. Left to right: Boris V. Morkovin, Sam Wood, on looking. Ray Greenhill, at camera; Richard L. Bare, directing; Dick Towle, assistant; Catherine McBride, script clerk; Maxine Adams, Evan Shaw and Richard Salisian, actors.

natural type he or she is. Always cast for types, depend very little on the actor's ability to transform his appearance or characterization to fit the part.

When the cast is assembled (trusting that there had been many applicants for the parts and that every part is correctly filled) the director proceeds to rehearse in the most difficult or dramatic scenes, or if this is not considered necessary, a reading is arranged, at which the story is read to all the cast by the director, who explains it scene by scene. This initial get-together of actors and director also is important in other ways. It serves to break the ice, as it were, to get acquainted and to stay acquainted. It allows the director to become familiar with the persons with whom he must work. It allows the actors to become acquainted with the director's personality, that personality which is to be instrumental in exposing their personality. At this first meeting, it is well for the director to make his first impression favorable by assuring the cast that he knows what he wants and that he is going to get it. The greatest mistake amateur directors make is not securing the cast's confidence and respect, for unless this confidence and respect is obtained, there will be arguments, delays, and even perhaps complete disbandment. The director must be a good judge of human nature, and above all, a diplomat. His business of working with human nature demands that he know human nature. A director who has the ability to speak well and express himself clearly will find that the battle is half won. The other half of the battle, the basic prerequisites of direction, is merely the ability to understand a thing correctly, and to be able to make some one else understand it. Originality, leadership, persistence, experience, and dozens of other virtues are necessary to the successful director, but they all center around the fundamentals of understanding and explanation.

It doesn't necessarily stand to reason that to tell one to do a thing, one must be able to do it himself, but

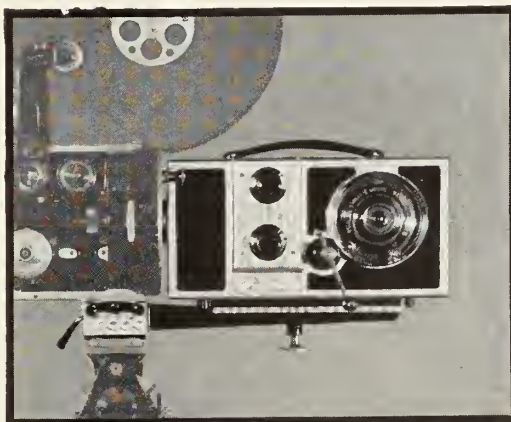
it certainly helps. There is nothing so provocative as after trying to explain to an actor how a scene should be done, she flares up (it's usually a she) indifferently walks off the set and announces that she would like to see *you* do it. Provocative . . . and embarrassing, unless *you can do it*. Explanation by demonstration is a very handy accomplishment to have tucked away at one's beck and call.

Perhaps this question presents itself. Just what should a director know? To begin gently, a director should know everything. He should know exactly the procedure of the dramatic motion picture from the very beginning of the embryonic idea in the writer's cerebrum, right down to the re-scrapping of the silver from discarded prints. This doesn't mean that one must be a mental wizard to be able to tell Aunt Minnie to register fear, but if one is to take this directing business seriously he must know what to expect of his technical mediums and of his co-workers.

Tempo, that old bugbear whose name frightens even the amateur, is perhaps the greatest single factor of importance. To bad tempo is attributed the defeat and downfall of many a film, which in other ways would be quite commendable. And this, mind you, is nobody's fault but the director's. His duty as a director commands that he regulate the tempo of a scene in accordance with the dramatic demands. Many people think that bad tempo means that the action is slow and that the picture drags, causing a loss of interest. This situation is quite possible, but not quite characteristic of what tempo means. Poor tempo might mean that there is a distinct lack of smoothness from one scene to another; that in a scene of uniform dramatic intensity the tempo of the various shots is un-uniform. It might mean the speed that a player walked across the room was too fast to suit the dramatic mood. It might mean that the cutting of adjacent scenes and splicing thereto

(Turn to Page 26)

THE lens that brings great ideas to life



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constant. Close focusing is done with auxiliary lenses. Write for full details. Sometimes available on rental to responsible studios.

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TELEVISION INTERFERENCE

By HARRY R. LUBCKE

Director of Television, Don Lee Broadcasting System



An ultra-high frequency receiver installation in a La Salle sedan, used to make signal strength measurements on the Don Lee ultra-high frequency transmitter W6XAO.

The antenna is the vertical rod on the rear of the car. This car was equipped with auto radio suppressors and is practically noiseless.

brief second. Instead of being distracted by the intermission, the looker's natural curiosity to "see what he has missed" is likely to heighten his interest in the scene. Only when the crashes of static are repeated sufficiently often and with sufficient intensity to cause an almost continuous interruption, does their presence become objectionable. When this is the case, a sound program would be unintelligible.

Should the looker be so unfortunately situated that a powerful local sound station would "ride over" into the television channel, the image takes on an "underwater appearance" with horizontal ripples. These may be pleasing if they are not too pronounced nor too long continued. The scene appears as though it were being viewed from a diving bell where gentle, but ever changing ripples play over the field of view.

Both natural and man-made static is found on short wave television. On ultra-short wave television, it is largely absent, but is replaced, unfortunately, by automobile ignition interference. It is becoming more and more important that this needless source of interference be eliminated. There are several ways in which this can be done. One of the easiest is to equip the car with suppressors and condensers as are used in the usual auto radio installation. Ultra-short wave signals can be received in a suppressed auto with no more interference than is produced by an ordinary car 200 feet away, while if it is driven past the ordinary residence receiving location it produces no interference at all. An unsuppressed automobile gives considerable interference under the above conditions, and presents a problem which should be considered by every automobile owner and manufacturer. This problem will receive attention because auto-



EVERYONE has heard static and interference over the radio, but few have seen these troublemakers on television. A discussion of their antics in the latter case is interesting.

In the first place, static sounds worse than it looks. A crash of static makes itself known on the television screen as an instantaneous "snow" storm of small white flakes. The eye is more tolerant of the snowstorm, than is the ear of the crackles and crashes of which it is composed. The slight interruption is often pleasing, giving the looker a momentary intermission, which rests his eye for a

mobile owners will soon become television lookers, and as such will not tolerate anything that will mar their own enjoyment.

If the television receiver is located close to the transmitting station, clear images will be received in spite of interference. In the Don Lee television work, interference-free cathode-ray images have been received from the W6XAO ultra-high frequency transmitter at a location on West Seventh Street, one of the busiest streets in Los Angeles, on the ground floor of a building, and less than 50 feet from a constant stream of automobiles and street cars. On the other hand, in a residential district where one automobile per hour passes the house, each one is "seen and heard" for a distance of 200 feet on either side thereof, although the receiver is located in the second story and the house was set back from the street by 50 feet. In this instance the house was on a hill on the side away from the television transmitting station and therefore in an area of unusually low field strength, which required the receiver to be operated with the volume control full on.

It is interesting to note the intensity of the interference created by the various makes of cars. All sound the same, giving a succession of sharp, intense clicks, but Model T Fords and certain other cars, not necessarily the large and heavy ones, give the most interference. It depends on the design of the ignition system, and whether or not the automobile is an old car, which may have become "weak" in its ignition, or "strong though weak" because of supplementary leaks and poor connections in the ignition system.

It is, of course, desirable to reduce automotive interference by proper design at the factory, and certain manufacturers are conducting research in this direction at the present time. The public should encourage such activity by favoring such makes and thereby solve the automobile interference problem before it becomes acute.

SINGLE-EXPOSURE LEICA CAMERA

Many miniature camera enthusiasts often wish to make one exposure and develop it immediately. With the usual camera today this may not be so convenient. With this idea in mind, E. Leitz, Inc., offers the Oligo Single Exposure Leica camera. The Oligo is a most interesting little device. It consists of a metal housing, the front of which is threaded to accommodate any of the Leica lenses, and the rear is fitted to accommodate a special ground glass focusing screen and special film holders interchangeably. A special Ibsor shutter which fits over the lens and provides the exposure-speeds completes the outfit.

The film holders are sturdily constructed of metal, and hold a single 1x1½ inch film which may be cut from a 35 mm. film roll. Sharp focus is established by the ground glass back.

The Oligo camera is excellent for making test shots, for copy work, and for all other uses where but one exposure is necessary.

See the Single Exposure Leica camera at your dealer's or write for additional information to E. Leitz, Inc., 60 East 10th Street, New York City.

GOERZ NEW BOOKLET

The C. P. Goerz American Optical Company has issued a charming little booklet, entitled "Goerz Lenses for Photographic Accuracy," which will be read with interest by all users of photographic lenses. This little book is a silent salesman for the fine old house of Goerz and it will be mailed to all who send for it at C. P. Goerz American Optical Company, 317 E. 34th Street, New York City. Goerz lenses may be obtained through all dealers in photographic supplies and a free trial of any stock size may be arranged for through these dealers.

Discharging an OBLIGATION

ANY manufacturer who has won his way into the confidence of a great industry is under obligation to maintain the standards that have given his product preference. Eastman Super-Sensitive "Pan" is continually discharging such an obligation. On the lot . . . in the laboratory . . . on the screen . . . it is unfailingly delivering the same qualities that first made it a sensation in the motion-picture world. Eastman Kodak Co. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-Sensitive*
Panchromatic Negative

When the Cameraman Finishes His Work, Ages Hence, There Will Be Nothing Else to Say About the History of the World.

THE CAMERAMAN

Vol. I.

MONTHLY NEWS OF PRODUCTION

STILL MEN ARE NEVER STILL

By BOB HUSSEY

An outstanding paradox in the jargon peculiar to the movie studio is the fact that those workers known as "still men" are usually the most active on the lot.

Their work of hurry and bustle perforce requires that they be the least still of any in the vast army of studio employees. And—further in the vein of the paradoxical—the pictures they take constitute the only studio photography in which it isn't necessary for everyone to keep still! Silence may be golden, but it isn't in the life of the "still man."

The job is one of the most thankless and one of the most important in the business. Still pictures assist, in major fashion, in the actual selling of motion pictures, for they become lobby displays, billboard advertising, magazine material and newspaper art.

Still pictures do more than contribute to the selling of motion pictures, they form a vital part in the making of productions.

Every set used in a production is photographed by the still man in the normal course of his duties, just as he photographs scenes of each sequence. These "production stills" are invaluable in later checking on details pertaining to innumerable factors, how certain clothes were worn, how a particular piece of furniture was placed, how the set itself appeared when barren of players.

Discussions or arguments based on these points are immediately and definitely settled by reference to the still pictures. Nor does it end there. Questions relating to make-up or lighting effects are similarly settled by the accurate still photographs.

The Photographic or Still Department at the Warner Brothers-First National Studios numbers about thirty employees under the supervision of "Gene" O'Brien. Among these workers are portrait photographers, still men, retouchers, developers, printers and laboratory technicians.

A still man is assigned to each motion picture unit and works with it throughout the duration of the filming of the picture.

The still man, despite the acknowledged usefulness of his work, nevertheless has a thankless job. The director, assistant directors, cameramen, everyone working on the set, players included, all think in terms of moving pictures and not still pictures.

To have production halted, wait while lighting is changed and focus adjusted, then pose for pictures, seems an imposition to tired actors. To all such objection and criticism, however, the still man is deaf. He has certain pictures to get and, come what may, he gets them!

How well these still men succeed at the Warner Brothers-First National Studios is best reflected in the fact that approximately three hundred still pictures are taken each day during the course of average production. This is exclusive, of course, of those photographs taken in gallery or portrait sittings.

Then the burden of work shifts to the laboratory workers who, from this number of negatives, turn out about fourteen hundred prints daily, not including the enlargements required by some periodicals.

During the filming of special productions, an almost unbelievable number of offstage and informal art is necessary to properly publicize the film.

On the recently completed special musical "Dames," for example, more than a thousand such photographs were taken. The colorful production "Madame DuBarry," which stars Dolores Del Rio in the title role, required more than seven hundred still pictures.

"Flirtation Walk," which is now being filmed under the direction of Frank Borzage with Dick Powell, Ruby Keeler and Pat O'Brien heading the strong cast, has already supplied more than four hundred still pictures with the filming schedule only half completed.

The still man is a past master at the art of diplomacy and tact. In approaching a tired star with the request that the player pose for a certain picture the photographer has in mind, he employs finesse indeed in order to gain complete co-operation. Invariably he succeeds. The play-

MISCELLANEOUS

Peter Mole of the firm of Mole-Richardson, Inc., is in New York on business.

Cliff Thomas, president of the Hollywood Camera Exchange, is home after a protracted sojourn in New York, Rochester and many other points east.

Lieutenant Reggie Lyons has returned from a sojourn of several weeks in New York. Recently Lieut. Lyons was honored by being selected to arrange a glossary of motion picture terms for one of the leading dictionaries and he did a fine piece of work at it. Congratulations, Lieut.

Ralph Farnham, engineer of the General Electric Company, at Nela Park, Cleveland, and who has been in Hollywood for some time working in connection with Technicolor, has returned to Cleveland for a brief sojourn, after which he will return here to complete his work.

Robert C. Bruce has just returned from a two months' trip through Europe where he photographed for Audio Productions, Inc., five new "Musical Moods" subjects in Ireland and Italy. These films will be ready for early fall release and will be a part of the series of musical subjects which are recorded musical entertainment with visual accompaniment.

Norman Foster heaved a sigh of relief the other day which he'd been waiting three months to heave. The opportunity came when he left the Fox projection room after viewing 20,000 feet of underwater scenes he made during his long vacation at Tahiti.

With a portable undersea camera of his own invention, and doing his own photography while wearing a diver's helmet 50 feet below the surface, Foster spent more than \$15,000, representing most of his savings, and then was called back to Hollywood by the Fox Film studio to take his place with Claire Trevor and others in Mary Roberts Rinehart's "The State Versus Elinor Norton."

With the exception of tests he made on the spot, Foster didn't know until the day aforementioned whether he really had something or had merely tossed \$15,000 overboard.

Despite the obvious handicaps under which he worked, the recent screening proves that he has obtained some unusual dramatic scenes and as soon as studio schedules permit he will return to the South Seas to complete the production.

ers may be tired and weary, the crew of workers on the set may be anxious to move on to the ensuing scene, but these things mean nothing to a still man except to urge him on to greater efforts.

The "away from the movie studio" photographer usually has considerable time to arrange his subjects, the lighting and the composition, but a still man with a movie troupe must work with dispatch and alacrity whenever an opportunity presents itself.

Any lull or pause in production is pounced upon by the still man for off-stage and informal pictures of the players. A mere moment is all he needs, between scenes, while sets are being rearranged, while lighting is being changed, while the camera crew changes position, and in those brief moments the still man works at furious pace to get his pictures.

It is then that the cry of "Hold it for a still!" or "Set still!" resounds through the set.

Everyone must wait, poised ready to hasten into action on their respective tasks, while the still man quickly adjusts his camera, instructs the players on what he wants, has the lights changed to suit his purposes, fixes the camera focus and gets his picture.

All this he does while the various workers restlessly await the chance to get at their jobs. The still man, quite unaware of any tenseness about him, nonchalantly goes about his business of taking pictures.

Exceptionally fine photography results, too, despite the confusion of the surroundings, the urgent need for speed, the anxiety of those about him for the still man to get out of the way.

And that's the story of the still man. He's the fellow who is one of the busiest workers in a movie studio—and they have nerve enough to call him a still man!

The still man is really anything but still.

COLUMBIA CLIPS

By BOB TOBEY

"ORCHIDS AND ONIONS," directed by David Burton. Teddy Tetzlaff returns to Columbia to take charge of the camera artistry in this epic with the esthetic title. Dave Kline is the operative cameraman, and Jack Anders and Walter Lackey are the assistants. Bill Robertson takes care of the lobby displays. Home P. Nette is guardian of the lumens; Glenn Kinniburgh twiddles the dials; Al Becker is grip; Gerrit Rasmussen handles the script and Art Black is the director.

The players are May Robson, Carole Lombard, Walter Connolly and Roger Pryor.

"I'LL FIX IT," directed by Roy Neill. Dave Kline handles the cinematographic direction in this one with Jack Young as his second cameraman. Fred Dawson and Jack Russell are assistants and Charles Thomas pops the tures. Lambert Day is mixer; Walter Neill is Roy Neill's chief dolly-pusher and Howa R. ertson lights the gaffs—er, gaffs the light.

The picture is a Jack Holt starring veh and other nummers are Mona Barrie, Winnie Lightner, James Butler, and Eddie Brophy.

The whole crew has been moved to the Mack Sennett lot to make this, Columbia's main unit, being too crowded with sets for the California Milestone specials, which are being produced currently.

Ben Kline has a new Weston light meter and now Jack Russell and Fred Dawson have moved over to the new toy, leaving operative cameraman Brownie to peace with his Leica.

"THAT'S GRATITUDE," directed by Frank Craven. This was a Bryan Foy production, Columbia release, written and directed by Craven and in which the versatile chap also had one of the leading roles. Others in the cast were Mary Carlisle, Arthur Byron, Helen Ware, Sherry Marlowe, and Charles Sabin.

Henry Freulich photographed, with H. Craven as his assistant. Freulich deserves more than ordinary credit for his excellent photography in this picture. It was his first feature-length production and, besides having to be his own operative cameraman, Henry was handicapped by typically inadequate, albeit willing, crew and independent production. In addition, Craven, as stage director as is Frank Craven, nevertheless his first directorial attempt in pictures and Freulich had to help guide the photograph continuity of the picture to an untold degree. The screen credit line was not a cate but a small part of the credit that really belongs to Henry.

LONGSHOTS

Emil Oster has moved up a step in the Columbia camera department. He now has assistant, and a much-needed one, according to the industrious Emil. The new man is Bob Oster. . . . Sam Nelson, Columbia's Studio Manager, does not have a birthday next month, nevertheless he is anticipating a present from his wife. The first present is now two years old. . . . Columbia is branching out, too. They have taken over the Mack Sennett Studio and the Roy Neill company is working there. And they've rented most of the office space at the California Studio for the Short Subjects department. . . .

Andre Barlatier has worked with the camera so long that nothing stops him. He bought an acre in North Hollywood and he wanted a house on it, but he couldn't build it. So he wanted for the right price. So he built a two-story frame house, knocked the roof off the top story off it, moved the remainder out to the North Hollywood lot, put a cellar underneath the flat roof on top of it, knocked out partitions and put in stairways there—and to top it off, he's going to stucco the whole thing. Believe it or not, Andre, he'll never get stuccoed. . . .

Assistant cameramen at Columbia are required to handle as their equipment as many pounds of battery boxes. All the boys here do now is grow tails and bigger ears and they be full-fledged truck horses. . . . Charlie Boyette is still in Chicago making shorts for the Trans. I don't mean the Thalias have run out of pictures. They are making a series of pictures with the World's Fair as a background. . . . Bohny was back there at the Fair

GRAM

The Cameramen of the Motion Picture Industry Have Long Since Borne the Hallmark of the World's Best Photography.

FROM THE CAMERAMAN'S ANGLE

No. 9

CINEMACARONI

(It's better with a little sauce.)

By ROBERT TOBEY



on to your hats, kids, here we go
Hollywood exhibitors have fun booking
of their double features. Here are a
potted on recent marquee:

THREE ON A HONEYMOON
ONE IS GUILTY

SPRINGTIME FOR HENRY
MANY HAPPY RETURNS

LITTLE WOMEN
BOTTOMS UP

once asked why an office boy is like
pile of old, worn out tennis shoes.
seem to remember the correct answer.
her one would make a good framed en-
for your hallway.

RUH DEPARTMENT . . . Doug Mont-
er went away on his vacation once and
n four times. It may sound mathe-
ay impossible, but that was because he
return" three extra times for a news-
company! . . . Director Roy Neill, in spite
he fact that he is well over the age of
er is a "dolly hound." He makes most
isenes from a dolly, or moving camera
oi. . . Among the more novel parties
eled this month (ahem!) was a dog
ven by Harriet Parsons. Harriet has
died Irish terrier, so she gave a party
ds of the same litter and they could
g their owners. Harriet spent most of
tin valiantly defending the merits of her
poch. One dog arrived in a specially
fied private car. My dogs aren't pedi-
d, but they take me around . . .

ar Dressler was one of the grandest ex-
le of a real trouper in the show business.
lie I made the last movie of her ever
de. The scenes, for Screen Snapshots,
de at famous La Quinta, near Palm
en the same day she was stricken and
n Santa Barbara, where she later was
ne. At that time she was in great pain
e cancers that were eating her life
y, t she smiled for my camera as if her
we a grand bed of roses. We all knew
that she had but a few more weeks
ive I believe that she, too, knew . . .
tivities garnered at Gene Raymond's Sur-
rthday Party at the Russian Eagle
den. Gene being really surprised and won-
dering what was the proper thing to do
ist—should he do a scream, a moan
a couple of nip-ups. . . . A waiter intro-
ng Larry Brian to his mother and brother.
All three wearing grand-canyon grins. . . .
Ean wearing a new coiffure that changes
penalty tremendously. . . . Helen Fer-
ene's manager, frantically attending
astute details and looking cuter than
t the movie stars. . . . Me trying to
tough practically in the dark, the palm
s so thick. . . . Frank Morgan tell-
tal out of school, about how he has
e if, when he is loaned out than when
wor on his home lot. He can tell peo-
le to go without affecting his contract.
Barbara Kent looking prettier and younger
n I last worked with her four years
e. Telegrams and fan birthday let-
fo Gene coming in by the bushel. . . .
rybly happy . . .

e'll now play a little game called
VA. NTANCE, using movie terms.

garr is the Chief Electrician on a movie
so re a sentence with the word GAFFER.

or tse of you who are busy evenings a

simple answer is, "I don't GAFFER any sugar,
thank you."

* * *

Or if you have nothing to do for a while,
you could even make up a little song about
it, like this: (provide your own music)

I don't GAFFER you;
You don't GAFFER me.
We don't GAFFER for each other;
It's simple as A, B, C.

You don't GAFFER candy,
I don't GAFFER clothes,
You make funny noises
When I'm in repose.

I know a little red-head
That ELECTRIFIES.
She could GAFFER for me;
I can read it in her eyes.

I must JUICE between you,
That's all that I can see.
For I don't GAFFER you, dear,
(Tremulo) And you don't GAFFER me.

* * *

If you still have some time and some of
your faculties left, you can write me and tell
me what else you devised.

Note to new writers:

Be original at any cost, even if you have
to buy three books and copy the best parts
of each.

POT SHOTS AT HOLLYWOOD FIRED AT
RANDOM: Charlie Chaplin rarely shows up
any more at places where he is scheduled to
appear. . . . The usual summer rush of auto-
graph collectors is on and driving the stars
crazy. Groups of forty to a hundred, com-
posed chiefly of school children on vacation,
hang around the popular eateries. . . . The
day after the appearance of a blatant fan
mag article stating that Marlene Dietrich's
run of appearances in masculine garb was
a publicity stunt (to invite comment, and
that Marlene was now commencing an orgy
of frilly clothes) I saw her at a polo match
with Von Sternberg. In slacks. . . . Auto-
graph collectors, gathered at the arrival of the
"Chief," mistook Vivian Tobin for her sister
Genevieve. It's easy to do. And were they
surprised at her signature. . . . A certain
famous screen Romeo, who keeps himself pretty
well saturated all the time, is the object of
a very funny tale. It seems he has made a
habit of proposing to the Hollywood gals,
about one or two a week. But the gals were
wise and nothing came of it. He made the
mistake of pulling the stunt on a little gal
fresh from the New York stage. And that
is the why of a Hollywood marriage that few
people couldn't understand. The gentleman was
THAT disconcerted. . . . At a recent event
news photographers put their heads together
and tore up all negatives of Irene Dunne. It
seems her father got snooty with them. It
Pays to Please the Press . . .

Thought for the stars of tomorrow:
Uneasy lies the head that wears a marcel.

* * *

Especially when you can't do henna thing with
it.

TODAY'S LITTLE PARADOX
Newspaper headline:
MARIAN NIXON WEDS
DIRECTOR BILL SEITER

* * *

It would seem that the Nixon-Seiter affair
was not a Nix-On-Seiter affair.

FROM PRINCESS KROPOTKIN'S CURRENT
COLUMN:

Some of the loveliest screen clothes are ab-
solute torture to wear. Jeannette MacDonald
has been a martyr to such artistic creations.
Constance Bennett achieves her slinky sil-
houette by loading her legs with lead. Under
her gown she wears a tight silk sheath with
lead weights sewn on it from hip to hem.

Lead undies are also worn by several other
stars.

* * *

Time for the Old Mariner to pop up with
his phrase: "Get out the lead, girls, we're
going to take a sounding."

Some VITAL STATISTICS, by BEVERLY
HILLS, from a current LIBERTY:

Jean Harlow was born Harlean Carpenter—
is strictly unvampirish in real life but is
generous, beautifully molded, unstinted in
showing her all to the camera . . .

* * *

The censors will fix that.

FLIP CLIPS

If ceauties
Are beauties
They've practically
No arduous deauties.

* * *

I prefer movies
To anchovies.

* * *

A gal that's like a doll from Dresden
Can marry the executive vice-presden.

* * *

Movie magnates
Get out dragnates
For salient
Talent.

* * *

Here's your hat, sir!

WARNER-FIRST NATIONAL

"FLIRTATION WALK." Director, Frank Bor-
zage; story, Delmar Daves and Lou Edelman,
screenplay, Delmar Daves; dance director, Bobby
Connelly; musical numbers, Mort Dixon and Al-
lie Wrubel; first cameraman, Sol Polito; super-
visor, Robert Lord.

Cast: Dick Powell, Ruby Keeler, Pat O'Brien,
John Eldredge, Ross Alexander, Guinn Williams,
Henry O'Neill, Glen Boles, John Arledge, Fred-
erick Burton, John Darrow.

"SINGER OF NAPLES" (Spanish). Director,
Howard Bretherton; dialogue director, Moreno
Cuyet; story, Manuel Reachi; first cameraman,
William Rees; supervisor, Manuel Reachi.

Cast: Enrico Caruso, Jr., Carmen Rio, Mona
Maris, Terry La Franconi, Alfonso Pedroza, An-
tonio Vidal, Emilia Leovalli, Enrique Acosta,
Francesco Maran.

UNIVERSAL

"GREAT EXPECTATIONS." Director, Stuart
Walker; story, Charles Dickens; screenplay,
Gladys Unger; first cameraman, George Robinson;
producer, Stanley Bergerman.

Cast: Henry Hull, Jane Wyatt, Alan Hale,
Phillips Holmes, Florence Reed, Francis L. Sulli-
van, Harry Cording, Douglas Wood, George
Breakstone, Jackie Searl, George Barraud, Rafae-
ka Otiano, Anne Howard.

"NIGHT LIFE OF THE GODS." Director,
Lowell Sherman; story, Thorne Smith; screen-
play, Barry Trivers; first cameraman, John Mes-
call; sound, Gilbert Kurland; producer, Carl
Laemmle, Jr.

COMPOSITION IN PRACTICE

PART II.

By WALTER BLUEMEL



SIMPLICITY is the keynote of effective composition. When a scene is cluttered up with many objects the eye wanders from one to another and is distracted from the object intended to be the center of interest. Every scene should have its center of interest, to which all other parts of the picture naturally lead the eye.

Most amateurs make the mistake of trying to include as much as possible into each scene, perhaps as an economy measure, with the result that it is merely a jumble of lines and forms which is anything but pleasing. There is no definite composition—no place for the eye to come to rest.

The object for which the picture was taken is generally insignificant. If a person is to be the center of interest the surroundings and background should be simple and unobtrusive, so as not to distract attention from the person.

Highly pictorial backgrounds are undesirable in portrait studies. If the background is important but it is desired to include a person in the scene the person can be so placed as to form part of the composition with the background, while if the person is the important thing he can be so placed and lighted as to form the center of interest to which the background is subordinated.

In professional pictures the background of some action is usually kept unobtrusive by throwing it out of focus—a trick which the amateur would do well to use. This is a natural effect, for the eye also tends to throw the background out of focus when looking at a nearby object, or at least is not conscious of the background. In a plot picture, where both character and background are important, it is best to show an in-focus longshot of both character and background and then emphasize the character by means of a close-up in which the background is out of focus. The spectator is vaguely conscious of the background, just as he would be in a real scene, yet is not distracted from the character.

A study of professional pictures will reveal the effectiveness of simplicity in composition. Simplicity avoids confusion and concentrates the attention where it is desired, as for instance, in the silhouette from "Frontier Marshal," which is certainly the height of simplicity. Sets are becoming more and more simple (note the predominance of modernistic sets, themselves the acme of simplicity) and lighting is more and more becoming the chief means of composition.

No better recent example of this can be found than "Men in White." The plain white walls of the hospital certainly did not offer good composition material, yet George Folsey, the cinematographer, obtained some very striking compositions merely by a skillful use of light and shadow. Shadows in themselves are simplicity, for they lack details, but they can be used most effectively. In one scene, for instance, Jean Hersholt, as a great physician, is shown talking to Clark Gable, while on the blank wall in the background was a large shadow of a microscope—an excellent symbol of medical science.

In another scene in which the nurse was dying the

room was kept dim, suggesting the vagueness that comes before death and, when she died, the light coming through a window brightened and outlined above her the shadow of a cross—a very simple and natural composition, yet highly symbolic and in keeping with the mood of the scene. In "Queen Christina" shadow was again used powerfully, especially in the scene where the mob storms the Queen's palace and she comes to the head of the stairs to meet the angry men. The light is placed low, throwing the enlarged shadow of the mob on the wall before the Queen. This gives much more of a feeling of impending danger than would a shot of the mob alone.

Shadows can frequently be used to suggest scenes which would otherwise be prohibitive. In "Viva Villa" shadows showed the hanging of peons and other gruesome scenes which it would be bad taste to show direct. This should suggest to the amateur many possibilities of showing scenes which he could otherwise not film.

In a picture that I made several years ago I was faced with the problem of showing a motion picture set at night in which the director and leading lady—the principal characters of the picture—were working. Naturally I could not secure a lot of equipment to use as atmosphere, so I simply painted a silhouette of a camera, microphone boom, and some lights on a piece of glass and placed it in front of a little arc-spot, which cast an enlarged shadow on the white wall behind the characters and created a perfect illusion.

In the daytime the sun could have been used to cast the shadow, though this would naturally have required a larger silhouette because the sun's rays are parallel instead of spreading like those from a spotlight. It is obvious that shadows have unlimited possibilities for the amateur.

Like composition, much has been written on lighting, and in order to avoid unnecessary repetition of a much discussed subject I will merely touch upon it. The importance of lighting cannot be over-emphasized, for it determines the difference between good and bad photography. Composition and lighting run hand in hand, and are, in fact, interdependent.

The primary purpose of lighting is, of course, to obtain enough illumination to photograph a subject, but this alone is not enough to photograph it at its best advantage. The lighting must be arranged not only to effect complete naturalness, but also to help the composition, to create roundness and depth by making the subject stand out from the background instead of to appear on the same plane. Direct front lighting with no light from the side and rear is always flat lighting. Cross lighting and back lighting, with only enough front light to permit proper exposure, will give much better results. Cross lighting lights the objects and characters from one side, giving them relief and roundness, while backlighting throws a halo around them which makes them stand out from the background, producing depth. This is a well known and obvious effect. The backlighting must, generally speaking, be brighter than the other light to get the best effect.

In lighting interiors with artificial light every source of light should have a reason, with the chief source apparently coming either from a window, a lamp or other lighting fixture, or a fireplace, whether in or out of the picture. The lighting from the natural source or sources should then be re-inforced with other lights of less intensity to avoid excessive contrasts and effect the necessary roundness and depth.

The composition should be built up first and lighted to enhance it, and the rest of the lighting necessary for proper exposure of the shadows filled in afterwards. This helps to obtain perfect composition and naturalness. A monotone viewing glass is a great aid in de-



Upper—Left: A scene from "Frontier Marshal," Fox production, the keynote of which is simplicity, obtained with the use of proper filters. Right: Screenkraft Productions still. Done in high key; creating a mood appropriate to a love scene.

Lower—Left: Scene from "Foreign Legion;" light in medium key with no contrasts—flat lighting. Right: Contrasty lighting, "Dr. Jekyll and Mr. Hyde;" creating weird, mysterious effect.

termining the placement of the light as the film will record it, and in indicating undesired contrasts which might otherwise escape the eye.

Exterior lighting is somewhat more difficult to control than artificial light, but much can be done with reflectors, which can be easily and cheaply constructed. Reflectors make it possible to light up shadows, so that the direct sun can be used for backlighting, while the reflectors furnish the less intense front light, which determines the exposure. In exterior lighting, as in interior, depth is obtained by contrasting the planes of light—having the foreground fairly dark and contrasty, while the background is lighter and decreases in contrast with the distance, as is the case in reality.

In addition to being natural and aiding composition the lighting should always be in keeping with the mood of the scene. A gay, joyful mood could hardly be expected in a dimly lit, sombre setting, and deeply dramatic, tragic, or mysterious action would seem out of place in brightly lighted surroundings, though sometimes such contrast may be desired.

The "key" of lighting is always an important consideration—high key, in which highlights predominate, for joy, happiness, gaiety, airiness, and delicacy; low key, in which dark shadows and sombre grays predominate, for somberness, tragedy, severity, and death; medium key, containing only gray with no extreme highlights and shadows, for fogginess, vagueness, dejection, and impending danger or tragedy; and contrasty key, containing extremes of highlights and shadows, for the weird, mysterious, horrible, and uncertain.

The accompanying stills illustrate these effects. The ship scene is done in high key, creating a mood fitting to a scene with two lovers. There are no heavy shadows, but a predominance of highlights. In the desert scene the lighting is in medium key, with no contrasts—flat lighting. This creates a depressive mood, one of vagueness, such as one would experience on the desert in a sandstorm. A weird, mysterious, and threatening mood is expressed by the contrasty lighting of the scene from

"Dr. Jekyll and Mr. Hyde." Note also the depth and backlighting, and the effect of the hard source light from below. The degree of diffusion of the light has an important bearing on the mood of the scene.

In exteriors the contrast and diffusion of light is controlled by color and neutral density filters, and by diffusion discs and gauzes, as well as by reflectors. Filters change the photographic value of certain colors and thus bring out some parts of a scene and subdue others. Color filters usually increase the contrast, due chiefly to the necessary underexposure of the shadows, as well as change the color values, while neutral density filters merely cut down the exposure without effecting the color rendition. Filters make clouds stand out by subduing the blue of the sky, and give the sky texture, which is much more pleasing and natural than the excessive contrast of a blank white sky. White objects can also be made to stand out boldly against the sky.

Interesting and effective silhouettes, such as the one from "Frontier Marshal" are obtainable with the proper filters, which cut down the exposure and leave the foreground dark, and which, therefore, make possible moonlight scenes taken in the daytime. Filters thus are a means of controlling the tone of exteriors, while further control is secured by manipulation of exposure, development and printing.

The purpose of diffusion is obvious—it irons out unnaturally sharp lines and contrasts and gives the entire scene a pleasing and natural softness. It furthermore smoothes out imperfections of the skin and make-up in close-ups. It plays an important part in inducing the proper emotional response in scenes in which the mood is soft and tender, as in love scenes. The use of diffusion, of course, should be governed by the nature of the scene photographed, and must at no time be obvious, so as to attract the spectators to the mechanics of the photography.

To avoid obviousness it is necessary to keep in mind the proper diffusion continuity—if one scene is heavily

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MOTION PICTURE SOUND RECORDING

Chapter XII

By CHARLES FELSTEAD, *Associate Editor*

THE main recording and monitoring amplifier system in the motion picture sound recording studio that employs Western Electric recording equipment was described in the three preceding chapters of this series. The first of those chapters dealt with the theoretical phases of audio-frequency amplification, the second of those chapters discussed the direct recording amplifiers that are installed in the amplifier room, and the chapter just preceding this one considered the monitoring amplifiers and the monitoring circuit arrangement.

The discussion has advanced to the point where we are prepared to consider the actual recording device. This is the apparatus that converts the electrical energy in the speech current to mechanical energy so that an impression may be made by it on a sensitive medium. In recording systems that employ the AEOLight, or some equivalent form of flickering light, including the Fox Movietone recording system, the electrical energy in the speech current is converted directly to variations in intensity of the brilliancy of a light source without the intervention of mechanical motion.

Development of Film Recording

Great advances were made in the development of the microphone and of audio-frequency amplifiers long before motion picture sound recording was made possible. But after the development of those two pieces of apparatus, the engineers who were working on the problem of finding a method for recording sound to accompany the motion picture were faced only by the difficulty of creating a device that would transform the electrical copy of the sound waves into some other form of energy that could be recorded on a suitable sensitive medium.

The amount of audio amplification they had available assured the engineers that the electric speech current would be of sufficient magnitude to operate the device after it had been perfected. They knew, too, that the fidelity of amplification of the equipment at their disposal was high enough to produce an electric current having practically the same wave form and proportionate amplitudes as the sound-pressure waves they wished to record.

This development work progressed along several lines, as is demonstrated by the fact that there are a number of distinctly different sound recording systems in use in

motion picture production work at the present time. In some of these recording systems, the electrical energy in the speech current is caused to operate a device that modulates a beam of light, either at the source of current that lights the lamp or after the light has been generated. In another method of recording, the electrical energy is transformed directly into suitable mechanical energy.

In the first case, the modulated beam of light from the lamp is permitted to fall on a moving strip of unexposed motion picture film, thereby creating a photographic image of its variations as a narrow *sound track* near one edge of the film. In the other method of recording, the mechanical energy derived from the electrical energy in the speech current records itself as a varying trace on a soft wax record.

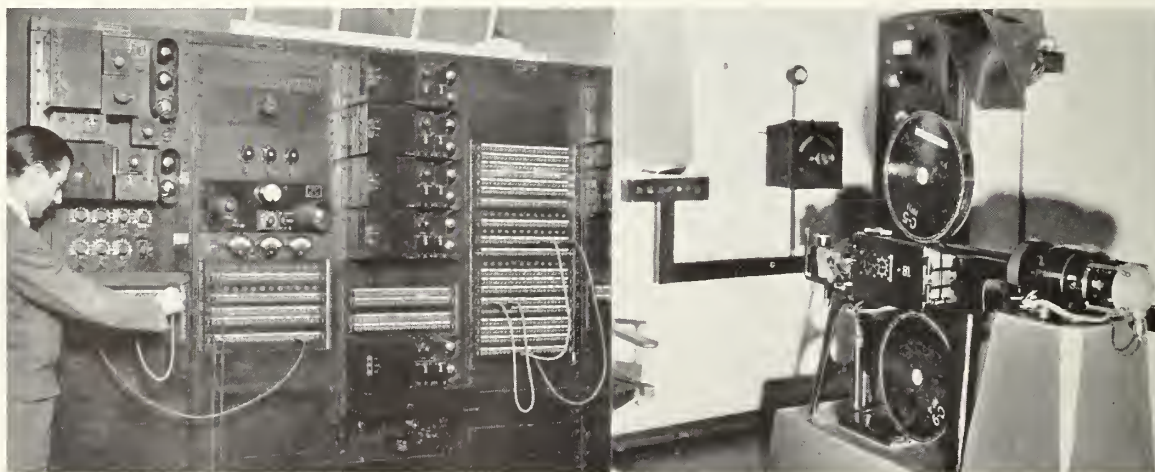
These are rather round about methods of recording sound, but they are the best that is available as yet. It is logical to assume that eventually the speech current, as this varying electric current that represents the sound wave is called, will be recorded directly on some medium without recourse to the expedient of first changing it into some other form of energy that is more easily recorded. But that development cannot be evolved until some practical method for recording electrical energy directly has been devised.

The Two Methods of Film Recording

The two methods that are generally employed for recording sound on motion picture film are known as the variable area-fixed density and the variable density-fixed area methods. Since the space is not available to permit entering into a detailed discussion of these two types and systems of film recording, and since this series is concerned primarily with the Western Electric recording system, we will consider only the variable density-fixed area method of film recording in this chapter.

There are two distinctly different recording systems that employ this method of recording sound on film. In the Fox Movietone recording system, this type of sound track (the variable density-fixed area) is produced by the flickering light from a lamp that is connected directly to the output of the recording amplifiers. In the Western Electric system of recording, the modulation of the light beam is accomplished by a device called a "light valve," which is a slit of variable width interposed between a light source of constant intensity and the moving film. Only the latter system will be discussed here.

In order to avoid reviewing the complicated electrical equipment that is connected between the microphones on the sound stage and the recording machine in which the film is exposed to the modulated light beam (all of which has been described in preceding chapters), we will assume that we have at the recording machine a speech current that is of the proper amplitude and



Left—The main amplifying equipment at Universal Pictures Studios. Charles Felstead, author of this series, illustrates how "patching" is done. Right—A film recording machine. Courtesy Paramount Productions.

that it is a faithful copy of the sound waves that we wish to record. We must also assume that in addition to the speech circuit that brings in this speech current there are the necessary battery and power circuits entering the recording room.

The Film Recording Machine

The machine in which the motion picture film is exposed to this varying light beam is known as the *film recording machine*; and it is comparable to the motion picture camera, in which other film is exposed to the light reflected from a scene that is being photographed.

Both the film recording machine in the recording room and the motion picture camera on the sound stage are driven by special "interlocking" electric motors that start to revolve and stop at exactly the same time and that run at precisely the same speed. The speed of these motors is regulated so that they never vary by more than one-tenth of one per cent from a fixed speed of exactly 1200 r.p.m. when they are running.

The use of interlocked motors makes it possible to place *start marks* on the film in both the camera and the recording machine, and then to print the two pieces of film together on one positive film after they have been exposed with the assurance that they will match perfectly. Because the two start marks are made at identical points on the pieces of film in both machines and the machines started and run at precisely the same speed, the picture and sound track on the two pieces of film naturally must coincide exactly.

Another point of similarity in the camera and recording machine is in the light-tight construction of the box in which the film is exposed to light shining through a lens system in one end. However, the two machines differ in that the film moves uniformly and continuously past the lens system in the recording machine, whereas in the camera the film is drawn down intermittently *a frame* at a time past the one lens. The same type of film magazine is generally employed now on both types of machine; and the machines are both equipped with footage counters that indicate the number of feet of film run through the machine.

Film Recording Machine Construction

The mechanical construction of a film recording machine is evident from the accompanying photograph. The rectangular metal box is the chamber in which the film is exposed; and the two drum-shaped containers are the *magazines* in which the film is held before and after exposure. The film travels down from the loaded magazine on the top of the chamber through the recording chamber and on into the lower magazine.

On the end of the exposure chamber opposite the driving motor is the lens system and the light valve as-

sembly. Farther out on this same end of the machine is the lamp house in which is mounted the electric lamp that furnishes the light of constant intensity. The footage indicators are the two knob and pointer arrangements on the front of the exposure chamber. The whole recording machine and motor assembly is built on a special concrete foundation.

Just beneath the center of the machine is suspended a square metal box carrying the *PEC amplifier* (PEC represents *photo-electric cell*, a light sensitive vacuum tube), the functioning of which will be discussed in succeeding chapters. The large panel on the wall back of each recording machine is the control board on which are mounted the battery and speech circuit controls, the meters, and the other equipment associated with the recording machine.

The large control knob on the box mounted beneath the meter on the left-hand wall in the photograph functions as a control element in the motor circuit, as will be described in a later chapter. The meter likewise is in the motor circuit. It serves to indicate when normal recording motor speed has been attained. The row of switches in the metal box on the extreme left is the starting and stopping control for the motor system.

There are usually two film recording machines attached to each recording channel. The film magazines are removable to permit loading and unloading the film; and the door on the front of the exposure chamber is easily opened to allow the *threading* of the machine and the punching of the film with the start mark. The upper magazine from which the film is drawn is known as the *feed magazine* and the other one is termed the *take-up magazine*.

Uniform Film Motion Necessary

It is necessary that the angular velocity with which the film is carried past the lens system that focuses the image of the light valve onto the film be as uniform as it is physically possible to make it. In the recording machine there are two large wheels around which the film is carried inside of the exposure chamber. These wheels are known as the *sprockets*; and it is while passing over the sprocket just in front of the lens in the exposure chamber that the film is exposed to the light passing through the light valve. This sprocket engages just twenty of the sprocket holes in the edge of the film; so there is almost no possibility that the film will slip while passing under the light beam.

These sprockets are both driven by the motor shaft through a worm and worm-wheel; but whereas the upper of the large sprockets, the one that draws the film from the upper magazine, is driven directly by the

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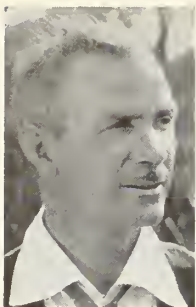
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MOTION PICTURE PERSONNEL AND PRODUCTION EXPENSE

By PAUL R. HARMER

QUITE often we hear the query, "Who gets all the money the motion picture producers spend in Hollywood? Do the stars, or is it the studio officials, or the director; or, is it the author?"

The truth is, the money is paid out to a very large group of people whom the public do not know and seldom ever hear about. However, these people are all important to the work of getting the pictures completed and are usually specialists in some particular line.

Major studio productions and large independent productions cost about the same; the only difference is in the itemized accounts which show that the major studios have a high overhead, but the independent studios, to offset this, have a high rental cost.

An occasional picture is made where the costs are extra heavy for transportation and hotel bills, while another picture would show extra heavy expense for stars, cast and extra talent; while still another would show great expense in story rights. When you see the headlines on a billboard announcing a million dollar production, do not be deceived that the picture cost that much; such figures probably are based on what the exhibitors hope the picture will gross in sales. The actual cash spent on a picture in production is less than most people imagine and considerably less than that claimed by the usual ballyhoo. So if "Sophie Glutz's Last Stand," or some other picture didn't make you wish you'd seen it billed as a million dollar spectacle, just realize that the publicity department had to earn a living, too.

For example of costs, the most popular picture made is the society comedy-drama, which if well done, is a fair average of costs for the rest of the program.

The following headings are in their order in relation to their cost; the most expensive items come first and the least expensive last:

Overhead, Laboratory and Film, Stars, Cast and Extra Talent, Staff, Settings, Story and Adaptation, Direction, Electrical, Sound, Editing, Transportation, Music, Wardrobe, Miscellaneous.

The first item, termed overhead, covers a vast amount of expense with which every major production is charged directly and almost every independent production is charged indirectly through rentals, etc., all of which is itemized as follows:

Executive Salaries, Executive Supplies and Expense, Production Salaries, Production Supplies and Expense, Casting Salaries, Casting Supplies and Expense, Casting Tests, Accounting Salaries, Accounting Salaries Timekeepers, Accounting Stationery and Expense, Purchasing Salaries, Purchasing Supplies and Expense, General Stores Salaries, General Supplies and Expense, Telephone Operators—Salaries, Telephone Expense, Telephone Tolls, Telegraph Expense, Information Salaries, Gate-man, Watchman, Watchman and Information Expense, Janitors' Salaries, Gardeners' Salaries, Firemen's Salaries, Janitor Supplies, Light Globes, Handling Office Equipment, Maintenance Grounds Expense, Special Maintenance, Donations, Dues, Freight, Express, Hauling Freight and Express, Legal Fees and Expense, Elec-

tric Current, Gas, Water, Postage, Executive Traveling and Hotel, Interest and Discount, Insurance on Fire, Insurance on Earthquake, Insurance on Compensation, Insurance on Public Liability, Insurance on Autos and Trucks, Insurance—Miscellaneous, Taxes, Repairs and Upkeep on Buildings, Fire Equipment, Projection Equipment, Camera Equipment, Trucks and Cars, Cutting Rooms and Equipment, Machine Shops, Music Equipment, Sound Recording Equipment, New Construction, Lighting Equipment, Generators, Property Department, Dressing Rooms, Furniture and Fixtures, Auditing Fees, Inventory, General Printing and Stationery, Firm Alarm Service, Miscellaneous Unclassified, Alterations of Buildings, Drinking Water and Cups, Publicity, Personnel and Employment, Personnel and Employment Expense, First Aid Salaries, First Aid Expense, Special Production Expense, Abandoned Productions, Additional Charges, Stories, Continuities, Non-collectible Debts, Fan Mail Salaries, Fan Mail Expense, Library Expense, Experimental Expense, Prints Rented, Inventory Adjustments, General Depreciation, Depreciation on Standing Sets, Income Credits, Stage Space Rentals, Miscellaneous Equipment Rental, Profit on Material, Profit on Labor, Miscellaneous Income, Scrap Film Sales, Fan Photo Sales, Standing Set Rentals, Salvage.

Laboratory and film are divided about equally; raw negative, positive and sound track cost about the same as the processing labor and materials.

Stars, supporting cast and extra talent (the male and female stars usually take half of this sum) and the balance goes to other players.

The staff is divided into three groups as follows: The camera crew consists of a supervising cameraman, an operative cameraman, process cameraman, a still photographer, two assistant cameramen, two grips and sometimes an electrician.

The sound department group consists of a recording engineer and two assistants.

The third group consists of the assistant director, property man and script clerk.

Settings are next in order, with an art director in charge, a superintendent of construction, carpenter foreman, paint foreman, scenic artists, set dressers and drapery experts, also a number of laborers and trucks.

Most of the work done by the process cameraman is done in co-operation with the art department.

Story and adaptation is next in order. Two or three writers usually collaborate on an original story or adapt an old one which has proved popular.

A director is one of the most important positions in the studio and he earns approximately the same salary as the star.

Electrical is divided into equipment rental, setting up and striking the equipment and the operation of same.

Sound expense is divided into rental, maintenance and royalties; the latter taking nearly all of this item.

Editing of pictures and sound positive is usually done by a head cutter and one assistant, while negative is handled by a negative cutter.

Transportation includes passenger cars and trucks necessary to the production.

Music is taken care of by the musical director. He is usually assisted by song writers, composers, an orchestra and necessary soloists.

Wardrobe is handled by a wardrobe designer with necessary assistants.

Miscellaneous covers petty cash.

An itemized production cost sheet is as follows:

Production Supervisor, Story, Continuity Writers, Typing and Supplies, Director, Stars, Supporting Cast,

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MOTION PICTURE SOUND RECORDING

(Continued from Page 21)

shaft of the worm wheel, the large sprocket that carries the film past the light beam is driven through a special mechanical filter.

This mechanical filter is to iron out any variations that may occur in the speed of the driving motor and to compensate for any imperfections in the driving gears. The heavy flywheel built directly on the motor shaft likewise helps to steady the speed of the motor. All of this mechanical filtering has for its object the elimination of "flutter" in the sound track, which is produced by any intermittent variations in the angular velocity of the film as it is carried past the point of exposure.

Film Speed Must Be Constant

The speed at which the film is pulled through the recording machine is precisely ninety feet a minute, corresponding to a driving motor speed of 1200 revolutions per minute; and in an ideal recording machine, the film would pass the exposing light beam at this speed with absolute uniformity and steadiness in rate of travel. The uniform rotation of the sprocket that carries the film past the light beam is not affected by variations in the rotation of the other, the feed sprocket, due to the two loops that are left in the film between the two sprockets, because any variations in the rotation of the feed sprocket from normal will be absorbed by these two film loops and have no effect on the angular velocity of the sprocket carrying the film past the light beam.

The feed sprocket not only draws the film from the upper magazine, but it feeds it down to the lower, or take-up, magazine. If a steady sine wave representing any audio frequency, such as 1000 cycles per second, is recorded and there is any flutter present in the recording machine, the recorded sound when it is projected will vary up and down in tone. The same thing happens to any sound that is recorded in a machine in which there is flutter present; but it is more noticeable with a steady tone because of the pureness of the note.

The next chapter will continue with the discussion of film recording, going on through a description of the constant light source and the light valve assembly.

MOTION PICTURE PERSONNEL AND PRODUCTION EXPENSE

(Continued from Page 22)

Extra Talent, Music Director, Musicians, Copyist and Supplies, License Fees, Production Staff, Cameramen's Salaries, Rentals, Sound Recorder and Assistants, Miscellaneous Sound Expense, Art Supervisor, Set Designing, Set Operation, Set Striking, Wardrobe Designing, Wardrobe Purchased, Wardrobe Manufactured, Wardrobe Rentals, Wardrobe Lost and Damaged, Make-up Salaries, Make-up Material, Properties Rented, Properties Manufactured, Properties Purchased, Lighting Labor, Lighting Current, Lighting Supplies, Lighting Equipment Rentals, Laboratory, Picture Negative Raw Stock, Picture Negative Developing, Picture Positive, Developing and Printing, Still Negative and Prints, Sound Track, Positive Raw Stock, Sound Track, Developing, Sound Track, Printing, Still Negative and Prints, Check-up and Master Print, Titles, Editing Salaries, Preview Expense, Projectionists' Salaries, Sound Effects Salaries, Material, Rentals, Photographic Effects Salaries, Material, Contract Work, Stock Shots, Still Prints, Miscellaneous, Transportation for Art Department, Property Department, Wardrobe, Electrical, Location, General Transportation, Location Rentals, Railroad Fares, Hotels and Meals, Miscellaneous, Miscellaneous Meals, Tests, Unclassified Expense, Royalties, Special Insurance.

The above items vary in cost according to the nature of the Production.

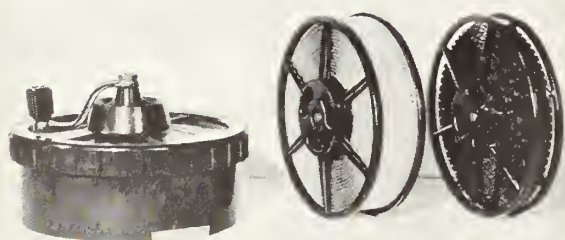
After the production is made and previewed there is still a very large expense which must be charged against it before the picture is released to the public.

Release prints, sometimes as many as two hundred, are made for American distribution; eleven are made for foreign distribution and several lavenders to be used as duplicate negatives. In all two hundred and fifteen prints; then to this sum is added exploitation and sales expense.

Making a *successful* feature motion picture requires a highly specialized group of people and complete harmonious co-operation from all concerned.



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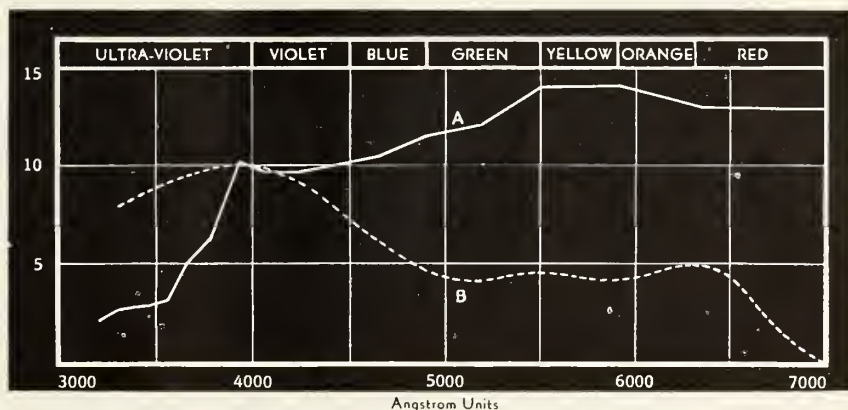
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THE IMPORTANCE OF BEING A DIRECTOR

(Continued from Page 13)

was done incorrectly, or that the camera speed was too fast or too slow, or that the rhythm with which the characters carried on a conversation was not altogether smooth. Tempo simply means the speed at which almost anything is done during the filming of a picture. And it is just as difficult to watch the speed with which all these factors move as it sounds . . . and even more important. If there is anything that will ruin a comedy it is slow tempo. Comedies are the hardest kind of stories to film anyway, so if your preview audience doesn't laugh at your comedy, it doesn't necessarily mean that the tempo is wrong.

Of course to be an exponent of tempo, one must be able to distinguish and recognize good and bad tempo and, when a picture is condemned as having displayed bad tempo, it is best to be able to analyze just what agent was out of accordance. Tempo is often hard to criticize when viewing a picture for the first time, but after projecting the film several times, and with a little practice, good or bad tempo can easily be analyzed.

Getting back to the subject of close co-ordination of a film group's working parts, perhaps the department most easily to get out of adjustment or tune with the rest is the editorial. You know as well as I do what the cutter means to a production; what he can do to save a poorly shot picture, and how he can tear down (just by a simple twist of the wrist) everything the director and cameraman did to make the picture good. The director and the editor work as closely, if not closer, than the director and the scenarist. The editor should be on the set during the shooting to absorb clearly the full significance of the idea that the director is attempting to put over. Many times when an editor cuts a film "blind" without having watched the taking of the film, he will interpret the thought and mood much differently than did the director, and the result will be the loss of the central idea, which the writer, the director, and the cameraman have so closely collaborated to achieve. It also goes without saying that the cutter will often save a mediocre picture from utter ruin simply by skillful editing.

Some directors cut their pictures as they shoot. That is, they take into consideration while they shoot the problems that the cutter will encounter when he edits the film. This method of shooting is exceptionally good for the amateur film director. Here again brings the point of unification to the front.

If the story to be filmed is one of extreme dramatic and emotional character, the wise amateur director will

shoot his story as nearly as possible in chronological sequence form. This method will be found to enable the characters to get into the mood of the story and, to feel their portrayals more, thus helping them to grow in characterization as the story grows. This system of shooting is not always practical depending entirely on the construction of the story. For instance, in a story which contains an over-abundance of "cut-backs" from the action in one locale to the action in another locale, it is more practical to shoot all the scenes on one set at the same time, thus eliminating the returning to that set to finish after shooting intermediate scenes on some other set.

The flexible camera (meaning the use of the camera on a perambulator) is one of the greatest expressive tools of the director, if he will only realize this. True, the overdoing of this defeats its own purpose, but after all, everything can be overdone. The true artist senses when a thing is overdone. For smooth flow of action, there is perhaps nothing quite like a moving camera; following the characters through the set, or wandering from the center of interest over to a small table gently affixing itself onto a close-up of a clock, to indicate the passing of time.

The proper use of the mobile camera will accentuate any given mood, and in many cases, is the only effective way to photograph a scene. The camera must not be moved unless there is a definite dramatic reason for doing so. One of the valuable uses of the traveling camera is in the presentation of an abstract thought to be conveyed subtly or merely by suggestion.

A very good example of this from a current picture, Paramount's "The Scarlet Empress," in which the camera travels down a torture chamber disclosing one by one several executioners placing their victim's heads on the chopping blocks. At the end of the chamber the camera comes to a stop and then proceeds to retrace its course, but this time as it passes the executioners, only the upper halves of the men are shown, the blocks and the kneeling victims out of sight. As the camera slowly passes by, each executioner chops his victim's head off. The camera doesn't see the chopping blocks nor the heads falling off, yet we hear the axes, one by one, hit the blocks and we see the blood-thirsty grins on the faces of the executioners. There is no doubt in the observer's mind as to what has happened, yet it has merely been suggested to us that heads have been chopped off. This power of expressive suggestion is one of the greatest characteristics of the motion picture drama.

Speaking of the characteristics of the motion picture,



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STUDIO RENTALS

one may or may not be aware that there are several definite mediums of expression which are solely confined to the screen art. One of these is now being analyzed as to the logicality of its use by a director in one of our big studios. Yet it is the very thing which made the motion picture what it is today . . . the thing which so definitely divided it from the other medium of dramatic expression, the legitimate stage. It is the distinctive ability to alter the audience's perspective on the subject instantly, by simply cutting from long shots to close-ups, etc. In other words, the simultaneous presentation of thought material without regard for the limitations of time or space. The director to whom I have referred claims that this is an entirely illogical procedure, and that when the angle of view is to be altered, the camera must travel from the long shot slowly dolly into the close-up, just as if the audience got up out of their seats and walked up onto the stage to get a better look at the actors. This man would have motion pictures presented as they were stage dramas. He would rob the motion picture of the feature which makes the screen art an art. He would take from it the medium of expression which is found in no other form of dramatic presentation. It is the very heart and soul of cinematic art. Tempo, both in shooting and in cutting, centers around the direct cutting from shot to shot.

To be illustrative, suppose that a group of people are shown talking in a room, and the story calls for a strange girl to be shown screaming suddenly in the next room. What would happen to the tempo of the scene, if the camera had to dolly all the way through the set, go through the door into the next room, and then focus itself on the frightened face of a girl who by that time begins her scream? All shock or dramatic punch would be lost. How much better it is to instantly cut to a close-up of the girl's terrified face as she starts to scream. Then cut back to the reaction of the group, and in this way the story is kept moving, which is so important in situations such as these. A drag here would mean the complete ruination of the scene dramatically. I can hardly see how the motion picture will ever separate itself from this technique.

Just as there are no rules for art, there can be no definite rules for the directing of a motion picture. What one director does wrong, another will get away with. That is mainly why this article has dealt with generalities, rather than attempting to set down a set of rules to be faithfully abided by. One thing is sure, and I hope my readers will agree with me, that there is a definite, confirmed Importance of Being a Director.

Charlie Boyle, otherwise known as Otto Phocus, has just returned from Chicago where he has been shooting for Jack Townley comedies. For further information read his column "Out of Focus" in this issue.

Elmer Dyer, who claims that the sky is a nice, safe place, has recently signed a year's contract with Warner Bros. He had barely recovered from injuries sustained in his recent motorcycle spill when he grabbed his plane and beat it to San Diego to start shooting "Air Devils."



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HAIL INDIA!

The Moving Picture Monthly Annual for 1934 published in Bombay, India, has reached this office and we not only hasten to acknowledge receipt of it but also to compliment the publishers, Jaishanker K. Deviredi, and the editor, R. K. Rele, B.A., upon their enterprise in producing such a beautiful and artistically excellent magazine.

The book is immensely interesting and its pages constitute a liberal education in the cinema as it exists in India.

Commercially, also, the magazine appears to be prosperous and to the average reader in America its pages are amazing—most of us had no adequate idea of the wonderful development of the cinema art in India.

At this rate of growth India bids fair to outstrip the world, some day, and it may not be long before she comes knocking at our doors with pictures that will be most welcome additions to our American cinema bill of fare.

Hail, India! She is on the way!

S.M.P.E. BOARD NOMINATES

Homer G. Tasker of the United Research Corporation, Long Island City, New York, was nominated for the office of President of the Society of Motion Picture Engineers for the year 1935 at the recent meeting of the Board of Governors of the Society. Since Tasker was the only nominee for President, his election, to be held soon by mail ballot, is assured. This is also true of nominees for other executive offices since only one nominee each was chosen for the offices of Executive Vice-President, Editorial Vice-President, Convention Vice-President, Secretary, and Treasurer. The nominees for these offices were, respectively, Emery Huse, J. I. Crabtree, W. C. Kunzmann, J. H. Kurlander and T. E. Shea.

Nominees for the Board of Governors were as follows: Max C. Batzel, R. C. A. Victor; Sidney K. Wolf, Electrical Research Products; Terry Ramsaye, Quigley Publications, and Harry Rubin, Paramount Publix Corporation. Election of all officers will be announced at the Fall Meeting of the Society to be held at the Pennsylvania Hotel, October 29th. They will assume their duties on January 1, 1935.

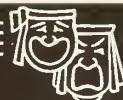
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COMPOSITION IN PRACTICE

(Continued from Page 19)

diffused and the following one is not the difference will naturally be noticeable. This is, however, permissible where the contrast is desired, as, for example, a diffused scene of a group of children at play followed immediately by a harsh scene on a battlefield. A combination of diffusion and fog filters may be used advantageously to produce fog effects when there is no fog and to diffuse and subdue backgrounds, as in the desert scene.

The importance of the lens is often overlooked in pictorial composition, not only in connection with the softness or sharpness of the different types of lenses but especially with the difference in perspective produced by lenses of different focal lengths, and with the depth of focus of the various lenses. The most useful all-round lens in 16 mm. photography is, of course, the one inch lens, which gives normal perspective and a considerable depth of focus, in some cases being universal even when wide open.

A focusing mount lens is desirable in very close shots, however. Shorter focus lenses, such as the common 15 mm. lenses, produce a wider angle of view, thus distorting the perspective to the point where they cannot be used for normal close-ups because the parts of a person which are closer to the lens become too large in proportion to the other parts.

For normal close-ups it is best to use lenses of longer focal length, preferably the two inch lens, for this lens gives the best perspective in close-ups, cuts down the angle of view so that the background becomes minimum, and has small depth of focus so that the background can readily be thrown out of focus.

These three lenses—15 mm. one inch, and two inch—are the best for amateur use, and should be part of every serious amateur's equipment. Longer focus lenses are difficult to handle, and are useful only in travel and sport pictures. The depth of focus of telescopic lenses is limited and special care must be taken in focusing.

It is not advisable to pan with a long focus lens, unless the panning is very slow and steady, for, because it brings objects closer, the movement produced is much greater than with short focal length lenses.

The 15 mm. lens, because of its wide angle, its universal focus (the shorter the focal length the greater the depth of field) and its greater speed has as many uses as the one inch lens. Its wide angle and speed make it especially indispensable in filming interiors, while in exteriors it is valuable because it gives a feeling of space, again due to its wide angle. Since the size of objects diminishes rapidly with the distance, the distance seems to be increased. It is, therefore, useful in photographing exteriors in which it is desired to include a lot of territory without panning, or to give the feeling of great space and loneliness.

Its depth of focus permits objects in the immediate foreground to be in focus without throwing the background out of focus. This was desired in close-ups of Wallace Beery in "Viva Villa" so that the background of the people, of which Villa was an inseparable part, would always be clear. The wide angle lens further permitted a wide expanse of background.

Telescopic lenses, from the two inch up, produce an opposite effect from the wide angle lens—they give a feeling of closeness and confinement by limiting the angle of view much as do binoculars. For this reason they were used in "Viva Villa" for the full shots of the battles in order to mass the mob more closely together and make the fighting seem more intense.

The dependence of composition on exposure, focus, camera movement, lighting, filters, and lenses indicates the importance of an understanding of the use of these optical and mechanical factors to the camera artist. The

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cameraman may be a great pictorial artist, but unless he is also a good technician and understands his camera and its accessories he will be unable to properly transfer a scene onto the screen as he wishes. The amateur should remember, therefore, that an understanding of his equipment is of first importance, then the understanding and practice of the principles of composition, which will enable him to make pictures of lasting beauty and appeal.

PARAMOUNT

"READY FOR LOVE." Director, Marion Gering; original, Roy Flannagan and Eulalie Spence; screenplay, J. P. McAvoy, Virginia Van Upp and William Slavens McNutt; first cameraman, Leo Tover; sound, Jack Goodrich; producer, Albert Lewis.

"LEMON DROP KID." Director, Marshall Neilan; story, Damon Runyon; screenplay, Howard Green; first cameraman, Henry Sharp; sound, Earl S. Hayman; producer, William Le Baron.

"ENTER MADAME." Director, Elliott Nugent; story, Gilda Varesi and Dolly Byrne; screenplay, Jacques Deval, Gladys Lehman and Charles Brackett; first cameraman, Theodor Sparkuhl; sound, H. D. Mills; producer, Benjamin Glazer.

FOX

"MARIE GALANTE." Director, Henry King; novel, Jacques Deval; screenplay, Reginald Berkeley; first cameraman, John Seitz; producer, Winfield Sheehan.

"THE STATE VS. ELINOR NORTON." Director, Hamilton MacFadden; novel, Mary Roberts Rinehart; screenplay, Rose Franken and Philip Klein; photography, George Schneidermann; producer, Sol Wurtzel.

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(Continued from Page 11)

camera workers know the importance of correct timing of development of the negative. The new timer is quite simplified. When the indicator is set to the number of minutes required the mechanism is automatically wound and the timing is started. It is equipped with an adjustable stop so that repeated settings may be made in the dark, permitting repeated timings of the same length while working in the dark without taking the timer out to the light.

Prepared Fine-Grain Developers: Many new prepared developers have appeared lately so that the miniature camera photographer now has at his disposal quite a number of dependable fine-grain developers which are either ready for use, or require simple dilution, or the solution of ready mixed chemicals in water.

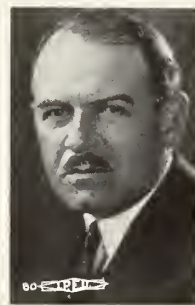
The R. J. Fitzsimons Company have introduced their M. P. G. developer which is composed of paraphenylene-

diamine, glycin, and metol, the latter being added to bring out the shadow detail. Edwal also has recently announced their prepared Diamine-Glycin developer. Diamine is pure paraphenylene-diamine manufactured by the Edwal Laboratories. Glycomine is a fine-grain prepared developer produced by the Stone Laboratories.

The old reliable Boratol fine-grain developer is now offered in a new form by Burleigh Brooks, and the Morgan Camera Shop of Hollywood has chosen a name appropriate with the modern photographic terminology for their new fine-grain developer—Supersoup.

We must not forget the number of prepared fine-grain developers which have been on the market for some time, and which are still performing commendable service, amongst which are Agfa Fine-Grain Developer, Perutz Developer, Hauff Glycin Tubes, Rodinol, Glycinol, Rytol, Micrograin 85, Nografin, etc.

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He was a member of the old Static Club and the A. S. C. and was for twelve years at the head of both the camera and laboratory departments of the famous old Lasky Studios.

Many successful cameramen of this day were his pupils and he photographed many of the world renowned stars. He will engage in production on his own account.

As a new wrinkle to beauty aid, Fay Wray had installed a small electric refrigerator in her boudoir in order to maintain a supply of ice packs. She has one also in her studio dressing room.

Among the many followers in the Frank Capra lineup is a pet rooster who thinks Frank is all right. The rooster came to like the director because Frank fed him ears of corn. This all happened during the filming of "Broadway Bill" at Columbia.

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THE KODAK MINIATURE ENLARGER



The Kodak Miniature Enlarger, designed for the purpose its name indicates, is currently announced by the Eastman Kodak Company.

The new enlarger permits full advantage to be taken of the fine-grain characteristics of Panatomic Film. It gives enlargements up to 11 by 14 inches from the negatives of the half Vest Pocket size (1 3/16 by 1 9/16 inches). It enlarges from 2 1/2 to 10 diameters, and takes negative areas up to 2 1/4 by 2 1/2 inches.

The Kodak Miniature Enlarger is one of few enlargers that permit a wide range of small-sized negatives to be used, even including the popular snapshot size of 2 1/4 by 3 1/4, provided the length is masked down to 2 1/2 inches.

The operation of the Kodak Miniature Enlarger is simplicity itself. Sliding the enlarger head up or down adjusts for picture size.

Critical focus is obtained by turning the lens mount in which a brilliant Kodak Anastigmat f:4.5 lens, especially designed for enlarging, is set. The lens is permanently installed, obviating any need for the user to put his camera out of commission by removing its lens for use in the enlarger, with possible damage to the lens an additional disadvantage.

Rheostat control gives two degrees of illumination from an inexpensive Mazda Photoflood Lamp. Dimmed, the light is about one-fifth the full power. This two-degree illumination provides a sufficient variation in light strength, making a lens diaphragm unnecessary and thus simplifying correct timing of exposures.

The lamp house is amply ventilated, and a special heat-absorbent glass disc affords further protection to the negative. A detachable safelight disc permits inserting and adjusting bromide paper while the printing light is on. The safelight disc is also useful in doing such combination work as printing in skies.

A new type of masking paper holder is an essential part of the outfit. The masking arms are attached to a metal frame, which by means of an ingenious catch is held up out of the way while both hands are adjusting the paper.

A paper-cabinet base, sold separately, is another important accessory. This compact cabinet affords a portable but firm base to which to clamp the enlarger standard, allowing the user to put the enlarger in any convenient working position.

For the benefit of owners of Kodak Auto-Focus Enlargers, Model B, or the earlier models adapted for the use of a Photoflood Lamp, the enlarging assembly of the Kodak Miniature Enlarger is available alone to convert the previous equipment into a miniature-type enlarger. This includes the lens and mount, the negative carrier, and the reflector. This converter, enlarging to 8 diameters, slides on the face plate in place of the regular enlarging unit.

Prices

Kodak Miniature Enlarger, including the masking paper holder but not the paper-cabinet base - - - - -	\$67.50
Kodak Miniature Enlarger, complete except for the paper holder or the paper-cabinet base -	\$52.50
Paper-cabinet base - - - - -	\$10.00
Assembly to equip Kodak Auto-Focus Enlarger to take miniature negatives - - - - -	\$35.00
Masking paper holder alone - - - - -	\$17.50

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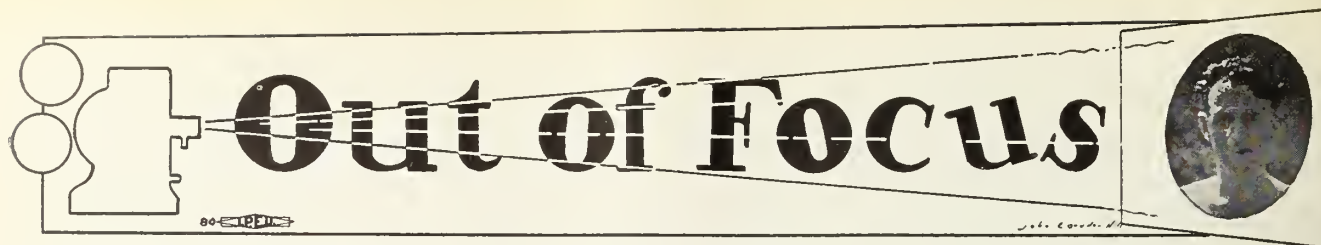
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By Otto Phocus

Dear Editor—

Chicago, Ill.

Will have to send you a letter for the "page" this issue as I will not be back in time to complete the article on "birds" as promised in the last issue. I obtained a lot of valuable data on this subject and feel sure you will not mind waiting several months or longer, as it will take that much time to make contact with the "birds" I met, and have them O. K. the data before releasing it.

I decided to take a couple of weeks off and go to work, and went east to photograph a picture at the Worlds Fair. Of course, you knew they were having a Fair at Chicago, but I'll bet you didn't know the Sky Ride was 628 feet high. If you refer to Westerberg's Book of Tables, page 13, it will tell you how far away you will have to go to shoot it with a two inch lens. You'll be surprised.

They can handle 5,000 visitors an hour, if they have 5,000 visitors an hour. It is so high, you can see Michigan on a clear day. I asked the man that expained this if he had ever heard of Catalina Island. He smiled and said, "on a clear day."

I have always wanted to take a course in "Show card writing in six easy lessons" and went over to the Hall of Signs to look around. There was a slight mistake somewhere as the only thing I could find was the Hall of Science. It was very nice tho and it contained the Hall of Photography. I met a girl there and call her the Kodak Girl. She was always saying, "Stop! Down!"

She had been a fan dancer, but the weather was so hot they had to give the fans to the customers. Some of the other fan dancers had to give their fans to the costumers. El foldo uppo, as we say in the Spanish.

I met a fellow that read the International Photographer and he said he got a few laughs out of it.

"I am glad you like my page," I informed him.

"Glad to know you, Mr. Tobey," he replied.

This had me stopped for an instant and then I asked him if he ever read "Out of Focus."

"No" he said, "As soon as my eyes bother me I stop reading."—Always clowning (?) those Chicago boys.

Met one of the men that shot Dillinger. He shot him after the police were all through. His name is Richardson and is with a news reel. Later, I saw him doing a "hand stand" on top of a sedan, photographing a parade. I asked him if he wasn't afraid of falling, and he said he didn't mind if it happened in the morning, as that would enable him to get home early.

Saw Harry Birch and asked him how his business was. He said "slipping". He photographs slide films and expects to enter the three color field shortly.

Max Markmann, (two n's) was my assistant, and when not "assistanting," manufactures racing motors. After a few days on the job he had a new idea of speed as we galloped from one end of the Fair to one end of the Fair.

Called on Tony Caputo at the R. K. O. Exchange and he was waiting for something to happen. He is on their news reel. We waited about 30 minutes and nothing happened, but I guess things are slow all over the east.

He had a nice office and a desk and can look out on Wash Ave. and watch the trucks go by, while waiting.

Fred (Whitey) Hafferkamp was the operative cameraman and is one of the best known commercial cameramen in the east. He lost a few pounds of weight, on account of the heat, but never lost his temper. That's something! This can be credited to his living in Oak Park. By the time you leave Oak Park and arrive in Chicago, you have no temper left. Go ahead and sue!

Gene Cour motored in from Wisconsin and has just completed a comedy. His next venture will be some shorts about flowers. You would not think this after meeting him, but didn't they put poetry on my page last month?

Oscar Abbe invited me to go out to the Essanay Studios to look at the old relics, but it is not necessary to travel that far in Chicago to see "old" relics.

Bill Strafford, Business Mgr. of Local 666, lives in Wheaton. I would not tell this, but he did not introduce me to his Secretary.

Fred Wagner arrived without the checkered flag and had more equipment on his back than you can get in the back of a Ford. He shot stills in all directions with the greatest of ease.

"Smiling" Charlie, of the House of David, is in the East for M. G. M. making talent tests and what a job for Charlie. He always did get the breaks.

I guess I have missed a few of the gang but it was so hot, Si. that you couldn't get a hi-ball for fifteen cents; and that is pretty hot.

I visited most of the shows at the fair, but don't see how I can write about them for a Photographic Magazine. Still, the exposure and composition at the Streets of Paris might be interesting.

You would appreciate the new bridge across the River at Michigan Ave., but I still think New York has the best Bridges.

Well so-long for now—keep your focus sharp and don't forget to stop down.

MOVIE STATISTICS

If all the money spent for motion pictures in 1933 were changed into pennies and piled up in one stack, one penny upon another, the pile would fall over.

If it were changed into one dollar bills and laid end to end it would reach quite a ways.

And if it were changed into two dollar bills and laid end to end it wouldn't do any good so far as we can see at this writing.

If it were changed into certified checks of 50c denomination and placed end to end it would reach to some star away out in the solar system but we don't know which one.

If all the usherettes who worked in motion pictures in 1933 would all quit working there wouldn't be anybody to show the people to their seats.

What has silk to do with **LAMP BULBS?**



The camera tells General Electric's scientists how silk controls light

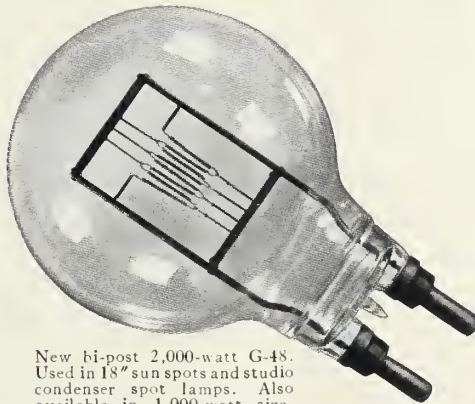
SILK, as cinematographers well know, is the most commonly used material for spreading the light to soften shadows, and for diffusing light to eliminate "hot spots". It helps you control light quality and intensity. It transmits from 65 to 75% of the light and effectively conceals the bright filament. The photo above shows how it distributes the light. Very similar characteristics are shown by ground glass and pebbled glass.

In white opal glass, as the companion photograph indicates, much better diffusion is secured but light transmission is reduced. This material transmits about 50% of the light directed at it.

Directly, these facts about translucent materials bear little relation to lamp making. But



White opal glass diffuses more but transmits less light



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they play a very important part in light control, a fundamental of illumination in cinematography as in home, factory or office. Hence G-E engineers and scientists study the characteristics of all translucent materials.

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HOLLYWOOD

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OCTOBER, 1934

VOL. 6
NO. 9



"Flirtation Walk," Warner Bros.-First National. Left to right: Harold Noyes, chief grip; Frank Flannagan, chief electrician; Lew Borzage, assistant director; Frank Evans, assistant cameraman; Al Greene, operative cameraman; Sol Polito, chief cameraman; Frank Borzage, director; Ruby Keeler, star; Richard Powell, leading man. Dance numbers by Bobby Connolly; Still Photographers, John Ellis and Mickey Marigold; Special Photographer, Bert Longworth.

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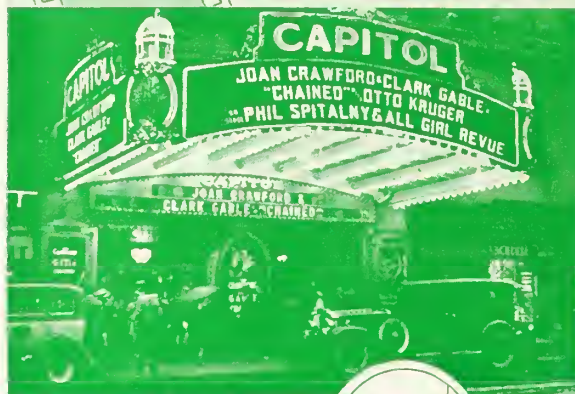
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MOTION PICTURE ARTS AND CRAFTS

Vol. 6 HOLLYWOOD, CALIFORNIA, OCTOBER, 1934 No. 9

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A Monthly Publication Dedicated to the Advancement of Cinematography in All
Its Branches; Professional and Amateur; Photography; Laboratory and Processing,
Film Editing, Sound Recording, Projection, Pictorialists.

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ANNOUNCEMENTS FOR NOVEMBER

Karl Barleben, Jr., F.R.P.S. will delight his special followers by submitting an article on "Thoughts on Projection Printing."

Because of lack of time to complete Fred Westerberg's second series of CINEMATOGRAPHER'S BOOK OF TABLES, the event has been set back to November.

Associate Editor Charles Felstead will offer to his readers the fourteenth chapter of his scholarly treatise on Motion Picture Sound Recording.

Charles P. Boyle, clever editor of "Out of Focus," will appear as usual in one of his delightful fantasies. Get the habit of reading his stuff.

Paul E. Bowles, pinch hitting for Walter Bluemel in this issue, will present Part II of the "Relationship Between Continuity and Cutting."

Augustus Wolfman, Walter Bluemel, Paul Harmer, Bob Hussey, Robert Tobey, Lewis W. Physioc and others of our staff and contributors will be represented with offerings of unusual interest to their readers.

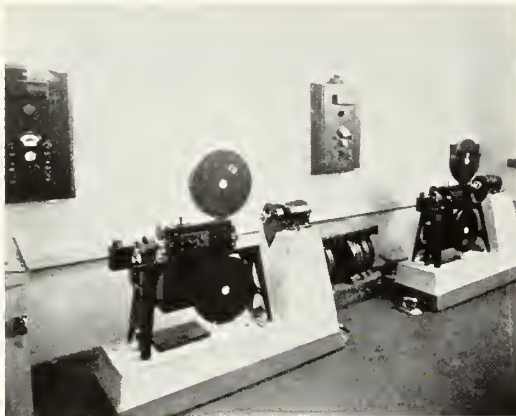
"The Mechanism of Vision," by the noted English author, lecturer and philosopher, Geoffrey Hodson, will appear without fail and every one interested in the occult should be sure to read it. Cinematographers, especially, will have an opportunity to consider vision from a standpoint opposed to the purely mechanical side.



MOTION PICTURE SOUND RECORDING

Chapter XIII

THE chapter last month introduced the subject of recording sound on motion picture film. The several film recording systems were mentioned; but, as in all the preceding chapters of this series, the bulk of the material presented concerned the Western Electric sound recording system.



The two film recording machines that constitute one recording channel. The switchboard and the spare loaded magazines may be seen. A film numbering punch is on the floor between the machines. Glass light valve dessicators are back of it.—Courtesy Universal Pictures Corporation.

The discussion last month was about the *film recording machine*, that ingenious machine in which unexposed motion picture film is drawn at a steady rate of speed past a lens system through which it is exposed to a modulated light beam. Most of the external constructional features were described, as well as the sprocket system that moves the film at a constant rate of speed. This chapter continues that discussion by describing the lens system, the recording lamp, and the light valve mounting. The photo-electric cell amplifiers that are used for PEC monitoring will also be described.

The Optical Portion

Directly ahead of the objective lens system attached to the front end of the *exposure chamber*, and through which the modulated light beam shines on the film and exposes it, is the magnetizing winding and the light valve assembly. Still farther out on this end of the recording machine is the metal lamp house in which is mounted the electric lamp that provides the light for exposing the moving film.

Between the lamp and the light valve is a condensing lens system that serves to concentrate the light from the lamp onto the opening in the frame of the light valve. The mounting of the lamp is adjustable so that it can be moved around to the position that permits the condensing lens to focus the light most sharply onto the light valve opening. This is one of the adjustments that must be made every morning by the men who operate the film recording machines. It is done after the glass envelope of the lamp has been polished with a soft cloth to remove any dust or grease that may have accumulated on it overnight.

It used to be that an eighteen-ampere projection lamp

with a heavy flat ribbon filament less than an inch long was used for the recording lamp. But now smaller lamps that require less current to heat the filament are used almost exclusively. The filament in this smaller lamp is formed of a closely-wound spiral of fine wire. The diameter of the spiral filament is about the same as the width of the flat ribbon filament, and the two filaments are of practically the same length. The lamp is lighted from a twelve-volt storage battery, and the current flow is regulated by an adjustable wire-wound rheostat in the line.

The lamp and light valve mountings are arranged so that the plane of the ribbon filament of the lamp is focused on the plane of the slot between the ribbons in the light valve. The metal housing that may be seen over this lamp is for the purpose of shielding the recording operator's eyes from the very bright light of the lamp. The chimney provides ventilation for cooling.

Adjustment of Lamp Current

Since the speed at which the film moves past the lens system in the recording machine is constant and unalterable, the average degree of exposure of the sound track may be regulated only by varying the intensity of the light from the recording lamp. So in order that a sound track of the correct average density will be obtained, it is necessary that just the right amount of current from the battery be supplied to the lamp to provide light of the proper intensity.

To permit the fine regulation of current that is required, a vernier rheostat is connected across the main rheostat that controls the current flow through the lamp filament. These two rheostats and an ammeter that indicates the amount of current flow are mounted on the

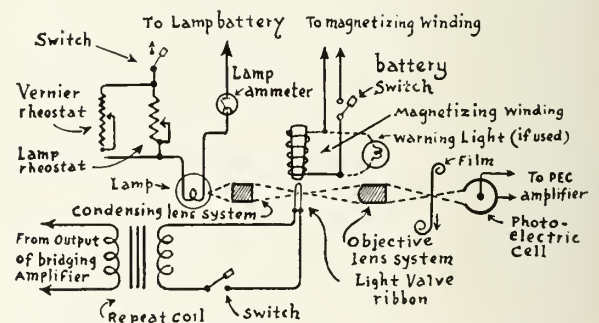


Fig. 1. Film recording machine battery and speech circuits.

large control panel on the wall back of the recording machine. The arrangement of the recording battery circuits is shown schematically in Figure 1.

The proper current for each lamp is determined by exposure tests with the light valve in place but disconnected from the recording circuit, the strings of the light valve remaining stationary during the tests. With the film running steadily at normal speed through the machine, the lamp current is varied in quarter-ampere steps between wide limits. A shutter blocks off the light while the current changes are being made. After development of the film, the most satisfactory current for that particular lamp is selected and the lamp marked with that figure. It is the duty of the recording engineers to maintain the lamp current at exactly the indi-

By CHARLES FELSTEAD, *Associate Editor*

cated value at all times during the making of sound takes.

The Electromagnet

The assembly of electromagnet and light valve—the combination which constitutes the light beam modulating device—is mounted between the lamp house and the objective lens system attached to the end of the exposure chamber.

Incidentally, it must be explained that this objective lens system serves to focus the light beam onto the sound track strip of the film after the beam has passed through the light valve. In other words, the objective lens system functions in much the same manner as the condensing lens system. But whereas the condensing lenses focus the light from the lamp onto the slit between the ribbons of the light valve, the objective lenses focus the modulated light from the light valve onto the film.

The field winding of the electromagnet, commonly known as the *magnetizing winding*, is a large multi-layer coil of wire wound around the center leg of an E-shaped core. The open part of the E faces toward the lamp house. The end of this center leg of the core, which is shorter than the other two legs, is wedge-shaped, with the long way of the wedge on the same plane as the plane of the light valve ribbon.

There is an opening in the face of this wedge that is eight mils wide by 256 mils long; and this opening is part of a slot that expands toward the back of the E to form an opening 204 mils wide by 256 mils long facing the objective lens system in the end of the exposure chamber. After the electromagnet assembly has been lined up at the factory in exactly the right position, it is fastened securely in place and the screw heads covered with sealing wax. This is to prevent any shifting in the alignment of the slot through which the light beam shines. The two lens assemblies are likewise se-

magnetizing winding at the beginning of a take results in sound not being recorded on the film; so a signal light is often connected across this circuit to serve as an indicator when the key switch is in the *on* position. If the lamp is not burning during recording, it behooves the operator to check the magnetizing winding circuit and the signal lamp.

The PEC Monitoring Circuit

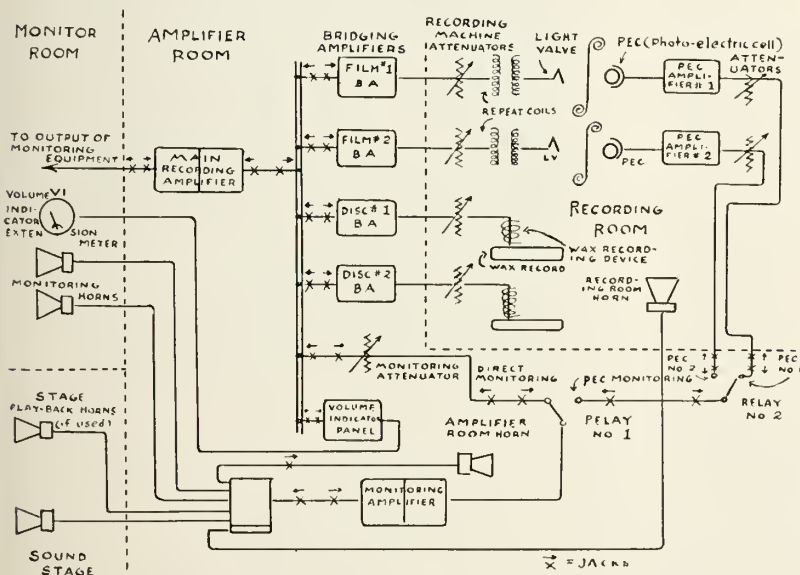
The locations of the two PEC (*photo-electric cell*) amplifiers in the monitoring circuit will be evident from an examination of Figure 2. One of these amplifiers is provided for each recording machine; and it is mounted directly on the frame of the machine in a metal box supported below the exposure chamber.

Inside of each film recording machine, a photo-electric cell is mounted behind the moving film in line with the light beam that shines through the light valve and exposes the sound track on the film. Through the action of the light valve, as we shall see in a later chapter, the beam of light is modulated by the amplified speech current supplied to the light valve by the bridging amplifier.

After exposing the sound track on the film in a degree directly proportional to the frequency and volume of the sound being picked up by the microphones, a portion of the light (in the order of four per cent) passes through the film and impinges on the sensitive surface of the photo-electric cell. Only those variations in the recording light that have passed through the film, and so have been recorded on it, can thus affect the photo-electric cell.

The Photo-Electric Cell

This PE cell comprises an evacuated glass container, resembling an electric light bulb, in which there are two electrodes. Except for a circular *window* on one side to admit light, the interior surface of the glass is coated with a sensitive photo-electric substance. This forms one electrode, known as the *cathode*. Potassium was used at first for this coating, but now caesium has almost entirely replaced it. The other electrode is a ring of metal, insulated from the PE coating and supported in the



No. 2 Block Schematic Diagram of Recording Channel

cured against shifting or tampering by sealing wax.

There is no control in the magnetizing winding circuit other than a key switch mounted on the panel on the wall, the winding being connected directly to a twelve-volt battery without a series resistance. Failure on the part of the recording operator to turn on the

center of the bulb. It is called the *anode*.

The photo-electric cell is connected to the input (the grid-filament) circuit of the first tube in the PEC amplifier in the manner shown in Figure 3. The polarizing voltage provided by battery PB is placed across the two electrodes of the cell through a high resistance (500,000 ohms) marked PR. The positive terminal of the polar-

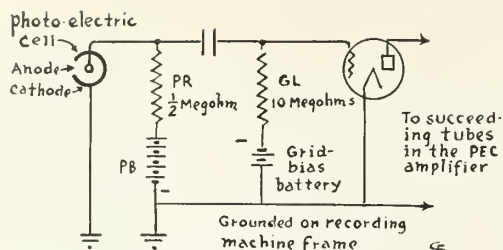


Fig. 3. Photo-electric cell input circuit.

izing battery is connected through the series resistance to the anode of the cell; while the negative terminal of the battery is connected directly to the grounded cathode of the cell.

The small percentage of the modulated light beam that the film permits to pass shines through the window in the photo-electric cell and strikes the sensitive cathode surface. This impinging of the light on the sensitive surface of the cell causes negative electrons to be emitted by the portion of the photo-electric surface exposed to the light. Within certain limits, this emission of electrons is at a rate proportional to the incidental light.

The polarizing voltage that is applied to the PE cell causes these negative electrons to be drawn to the positively-charged anode (for opposite electrical charges attract), thereby setting up a minute current flow in the PE cell circuit. This current flow is practically identical to the speech current being recorded.

The action is the same as that which takes place in a thermionic vacuum tube, which was explained in an earlier chapter. In a vacuum tube, the emission of electrons from the filament is caused by the passage of an electrical current heating the filament; in the photo-electric cell, the emission of electrons is caused by the action of light. In a vacuum tube, the filament (the cathode) is in the center and the plate (the anode) surrounds it; in the photo-electric cell, the disposition of these two elements is reversed.

The minute current flow in the PEC circuit is proportional to the intensity and quantity of the light falling on the photo-electric surface. Since the light is from an incandescent lamp (the recording lamp) that produces a light of constant intensity, the current in the PE cell circuit varies directly as the changes in the quantity of light that the moving ribbons of the light valve permit to pass.

The variation in current flow in the photo-electric cell circuit causes a variation in the voltage drop across the series resistor *PR*. This variation in voltage drop is fed through the coupling condenser, *C*, to the grid-filament circuit of the vacuum tube, where it produces a corresponding voltage drop across the grid-leak resistor, *GL*. This minute voltage variation is amplified by the tube in the manner previously discussed in the chapters on amplification. The grid bias battery is necessary to keep the grid at a definite negative potential.

The PEC Amplifier

The PEC amplifier is a three-stage affair employing small tubes of the "peanut" variety connected in a resistance-coupled circuit. The heavy metal box in which the amplifier is mounted is fastened directly to the frame of the recording machine; and both the frame and the metal box are carefully grounded.

The impedance of the PE cell circuit is very high, and the current in the circuit is so minute that any stray electric currents or disturbances ("static") picked up by the wire connecting the cell to the amplifier might be appreciable in comparison to the sound currents. Since these disturbing currents would be amplified in propor-

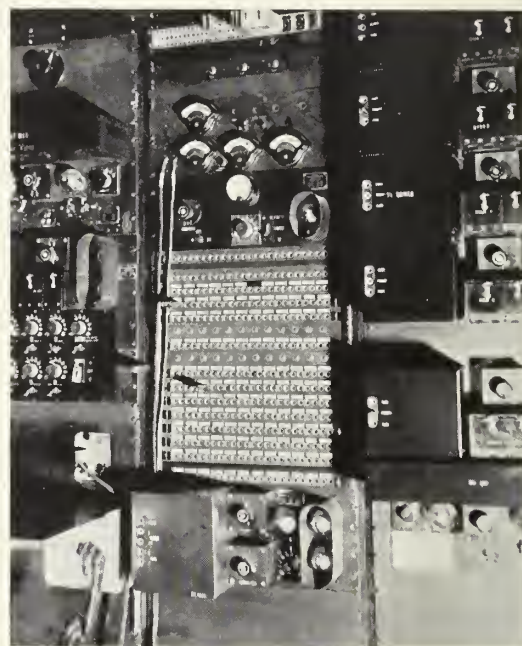
tion to the amplification of the sound currents, they might become extremely annoying in the monitoring circuit.

To minimize the picking up of these stray currents, the PEC amplifier is mounted as close as possible to the PE cell and connected to it by a short, electrically-shielded wire. The sound current is increased by the PEC amplifier to a level that can be safely transmitted before it is sent through the 500-ohm impedance output circuit of the amplifier to the monitoring circuit in the amplifier room.

The three tubes in the PEC amplifier are held in spring-suspended sockets as a protection against mechanical shock, which otherwise would cause the tube elements to vibrate and produce an unpleasant ringing sound in the output of the amplifier. This resilient mounting is particularly necessary for these tubes, because the mounting of the amplifier directly on the frame of the recording machine exposes it to considerable vibration from that source.

The amplifier has its own individual plate batteries, which also supply the polarizing voltage to the PE cell. These batteries are of the dry *B* battery type; and they are set in a metal box sunk in the concrete of the recording machine base.

The rheostat, filament on-off switch, and filament ammeter are all mounted on the large wall panel that carries the controls for the recording machine. The outputs of the two PEC amplifiers in each recording channel connect through variable attenuators that permit balancing of their electrical output levels to the contacts of the PEC relay, as shown in Figure 2.



A close-up of the amplifying equipment that constitutes a single "channel." The four recording bridging amplifiers are at the upper right; the inter-communicating telephone is at lower left set in a panel; the handset below it.—Courtesy Paramount Productions, Inc.

In the next chapter, the constructional features, as well as the operations of stringing and tuning the light valve will be discussed in detail.

It costs only \$1.00 to own a copy of Fred Westerberg's CAMERAMEN'S BOOK OF TABLES.

KODAK LOSES A SHINING LIGHT

Lewis B. Jones, vice-president of the Eastman Kodak Company, died August 26, of a heart attack while walking over his farm in Pittsford, New York, one of his favorite pastimes.

He was found dead by his son, Robert French Jones, who had come to rejoin his father after a brief trip to Pittsford.

With Kodak Since 1892

As the man whose advertising talent was largely responsible for making the Kodak known around the world, Mr. Jones was a notable figure in his profession. As the officer in charge of Eastman sales and advertising, he was active in the business of the Kodak Company until his death.

He joined the Eastman organization in 1892, four years after the Kodak had been introduced. Advertising up to that time had been handled by Mr. Eastman, but with growth of the business he engaged Mr. Jones.

Taking charge of advertising, Mr. Jones remained in active control of that department throughout the years of the company's greatest growth and until 1921, when he became vice-president in charge of sales and advertising policies throughout the world. In that capacity he had continued. He also had been a director since 1919.

As one outstanding development during Mr. Jones' vice-presidency, the Eastman retail organization in America has more than doubled in extent.

Mr. Jones was born in Dansville 68 years ago next Tuesday. His education was gained in Dansville and in Fairfield, and with the class of 1880 at the University of Rochester.

Before joining the Eastman organization he developed his unusual skill in writing by experience on three newspapers, *The Democrat and Chronicle*, *Kansas City Herald* and *Chicago Daily News*.

Throughout 42 years with the Eastman Kodak Company Mr. Jones' interest in the business was intense, yet with a surplus of energy and enthusiasm he continued



to be very much devoted to his hobbies. These were farming, an interest dating back to boyhood, and sailing.

The registered Holstein cattle that he raised took high honors for milk production; and during much of his life he owned sailboats. He was an enthusiastic member of the Rochester Yacht Club and a member of the syndicate that built the first Rochester boat for representation in the Canada's Cup races.

Symbolical of eminence in his profession, Mr. Jones was president of the Association of National Advertisers. He was a founder and early president of the Audit Bureau of Circulations. He was a director of the Audit Bureau at the time of his death.

During the World War he served as a "dollar-a-year man," writing advertising in association with George Creel.

Mr. Jones in 1889 married Alice French of Rochester. Mrs. Jones died a year ago this month.

The INTERNATIONAL PHOTOGRAPHER joins the deceased's host of friends in extending heartfelt sympathy to the stricken family and to his sorrowing associates.

"THE ONE GREAT WONDER"



Our suggestion that the SEVEN WONDERS of the ANCIENT WORLD be reconstructed in the metropolitan district of Los Angeles, as the nucleus of a Permanent Exposition proposed to celebrate the completion

of the Hoover Dam, has brought approval so far away as London. The editorial setting forth this proposal appeared in *The International Photographer* for August, 1934. More later.



The Criterion. Photo by Augustus Wolfman. Eastman S. S. Panchromatic Film. P.-Diamine-Glycin Developer.



THE CIRCLE OF CONFUSION: The miniature camera enthusiast comes in contact with this term quite often, so it would not be amiss to delve into the subject in order to make it clear to many who are not fully acquainted with its meaning.

Each point in the object is transformed by the lens into a dot or disc in the image. If the size of such discs be very small, the image will be sharp and the lens will resolve fine detail. Conversely, when such dots or discs are relatively large in size, they will overlap each other, very fine detail being lost, the lens producing soft results. In miniature camera photography we are interested in obtaining negatives upon which the image is sharply rendered, considering the subsequent enlargement of the tiny negative. We are therefore interested in obtaining a lens which produces a relatively small circle of confusion, one of at least 1/750th inch being the accepted standard.

The size of the circle of confusion is dictated by the correction of the lens for aberrations, chiefly spherical and also chromatic. Lenses have spherical surfaces and spherical aberration is due to the fact that the rays going through the marginal zones of the lens come to a focus nearer than those which pass through the center of the lens. In order to overcome this defect, the diaphragm is closed down, thereby cutting off some of the rays going through the marginal zones.

It would seem from the above fact that as the diaphragm is closed down, sharpness is increased. This is true up to a definite point which is different with various types of lenses. The aperture at which the lens exhibits the greatest amount of sharpness is known as its critical aperture. If the diaphragm be closed down beyond the critical aperture a new evil is introduced—diffraction, which is the blending of the light around the diaphragm. This increases unsharpness. In general, the critical aperture of lenses having a speed of $f:4.5$ is $f:11$; with $f:3.5$ lenses it is $f:9$; and in an $f:2.5$ lens it is $f:6.3$.

MINIATURE CAMERA PHOTOGRAPHY

As the lens is also opened from the critical aperture the circles of confusion increase in size so that the lens will exhibit less sharpness at large apertures. The larger the aperture of a lens, the more difficult it is to manufacture it so that it produces very sharp results. This is the reason why cheaper lenses having an aperture of $f:4.5$ or $f:6.3$ may produce sharper results than an extremely expensive speed lens with an aperture of $f:1.5$. The speed lens is constructed to enable photographs to be taken under extremely adverse light conditions; an $f:1.5$ lens is about 17 times faster than an $f:6.3$ lens. It is more expensive to produce a speed lens. We have lenses which exhibit comparatively great speed and are also extremely corrected to produce sharp results at all apertures, amongst which are the Leitz Summar $f:2$ and the Zeiss Sonnar $f:2$.

Chromatic aberration is due to the inability of the lens to focus the different wave-lengths or colors of light in the same plane. The eye is most sensitive to green and if we were to focus visually with a lens which does not focus the blue rays in the same plane as the green rays, unsharp results will be produced since the usual film is most sensitive to blue light. Similarly, if red rays are not brought to a focus in the same plane, unsharp results will be produced upon using panchromatic negative material.

While the aberrations described above chiefly cause lack of sharpness along the optical axis, unsharpness in the remainder of the field is also attributed by coma, astigmatism and curvature of field, together with spherical and chromatic aberrations. It should also be noted that unsharpness increases as the angle of the field from the axis increases.

Most miniature cameras are equipped with a lens of $f:3.5$ speed which will be found to be suitable for the general run of photographic work, especially when it is considered that such a lens can be closed down to $f:9$, sharpness increasing as the lens opening is decreased. It will be very rare to encounter conditions wherein the highest speed at which the shutter operates is not sufficient to prevent over-exposure with the diaphragm set at $f:9$. With the two-inch lens with which most miniature cameras are equipped, a stop of $f:9$ will be found to yield quite a degree of depth of focus.

Many photographers possess cameras such as the Leica and Contax which permit the use of various lenses. They will at some time consider the purchase of a speed lens to enable them to indulge in night photography. The fine quality of Leitz objectives cannot be questioned, so that owners of the Leica will find the selection of a speed lens quite simple. Similarly, photographers possessing Contax cameras will find Zeiss lenses at their disposal. Owners of other cameras which allow the interchange of lenses should exercise good judgment in purchasing a speed lens. A reputable make such as Schneider, Hugo Meyer, etc., should be considered.

Lens Stops: Miniature camera workers who have handled various cameras have noticed that in some lens the calibration of the diaphragm stops is different than

in others. Generally, two systems of calibration are used, the British-American and the Continental. Below is reproduced a table giving the diaphragm openings used in each of these systems and the relative exposure of each stop. It will be noticed that in either of these systems, each stop has double the value of the one preceding it when the lens is opened and, conversely, double the amount of exposure is required over the stop preceding it as the lens is closed down.

Lens Stops			
British-American	Continental	Relative Exposure	
f:1		1/64	
f:1.4		1/32	
f:2		1/16	
f:2.8		1/8	
	f:3.2		1/6
f:4		1/4	
	f:4.5		1/3
f:5.6		1/2	
	f:6.3		5/8
f:8		1	
	f:9		1 1/4
f:11.3		2	
	f:12.5		2 1/2
f:16		4	
	f:18		5
f:22.6		8	
	f:25		10
f:32		16	
	f:36		20

Chamois Skin: I have reached that stage where I regard chamois skin as an indispensable part of my equipment. My first use for it was to clean the dust from my camera. One day I noticed that the handsome chrome finish on the latter was acquiring some scratches despite the fact that I have a fine leather case for it. Being one of those finicky individuals who cannot bear to see his camera acquiring any marring factors, I had a small bag made from a piece of chamois skin which easily slips into the case with the camera. This bag has proved quite a handy adjunct, for whenever I wish to slip the camera into my pocket and leave all cases, etc., home, I am assured that the miniature will not become scratched by other objects in my pocket, nor will any dirt particles fall into spots where they will cause considerable trouble. Small bags have also been made for filters, so on occasions when even an eveready case may be too bulky, the necessary photographic equipment can be slipped into pockets with the assurance that no marring factors will be acquired.

A small piece of clean, soft chamois kept in the camera case serves to clean the lens, view finder, etc., and there are many times when, for some unaccountable reason, these optical parts have become smudged. Japanese lens tissue is undoubtedly one of the finest expedients to employ for cleaning optical glass, but a soft chamois skin is an ideal substitute.

During the processing of the miniature film, I usually employ a chamois to remove the excess moisture from the film when it has been removed from the wash water. For this purpose the chamois is constantly kept in a jar of water to guard against the formation of hard surfaces. Before it is applied to the film, the chamois is washed in fresh water, wrung out and then run down both sides of the film, care being taken not to apply it too firmly to the emulsion surface. It readily absorbs the droplets of moisture on the film without causing any scratches.

During enlarging, dust particles and small hairs seem to be so prevalent and numerous at times as to rob the photographer of all the joy which he anticipates in the making of his prints. Before inserting the film in the enlarger, it is best to examine it and remove all dirt

By

AUGUSTUS

WOLFMAN



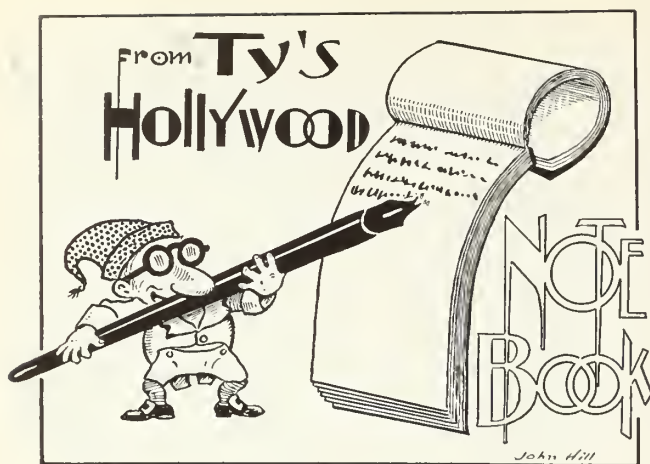
and dust particles, and a chamois skin is quite handy for this purpose. Before a new portion of film is placed in the negative carrier, I usually wipe it with the chamois and after every two or three prints have been made, both the film and the glass negative carrier are removed from the enlarger and the carrier is wiped with the chamois. Such procedure may not be necessary on all occasions, but there are times when the air seems to be charged with dust particles. Some workers will claim that when the film is wiped static electricity is formed which creates a magnetic attraction for the dust in the air. This may be true, but none the less, as long as dust particles are present on the film they must be removed and the chamois is an ideal expedient for this purpose. There may be many other possible uses for chamois skin and from personal experience I have deemed it wise always to keep a fresh piece around.

A Fine-Grain Tip: There are many occasions where the photographer cannot use his pet fine-grain formula, such as in traveling and if it is necessary to develop the film on the spot, a few precautions should be kept in mind. Before proceeding, the prepared fine-grain formulas on the market should be kept in mind; there are many which are quite reliable, producing excellent fine-grain results and one or more packages of such developers taken along on a trip will be found quite helpful.

An occasion may arise in which we must accept whatever developing solution there is at hand and in such an instance a few facts should be borne in mind. The first is to employ a good fine-grain film such as Perutz, Agfa Fine-Grain Plenachrome, Panatomic, DuPont Micropan, etc. The film should receive a correct exposure but should not be over-exposed. Over-exposure will cause development to proceed at a fast rate with the grains in the emulsion rupturing their gelatin coating and uniting with other grains to form clumps of silver grains, resulting in coarse grain.

The negative should be developed on the thin side. The longer the negative remains in the developer and the more the density increases, the more will graininess be augmented. It is a fact that if a print of constant density is made from negatives of increasing density, the graininess of the print increases as the density of the negative increases. If these precautions are observed, it will be surprising to see to what degree the negative can be enlarged without any objectionable grain being observed.

In subsequently enlarging the negative, the choice of the printing paper will also help. Rough matte papers have the ability to conceal the grain to some extent, whereas glossy papers readily reveal it. Soft papers also tend to keep graininess down while hard papers seem to reveal it to a great extent. By exercising a little care, it will be surprising to find what can be done in a pinch where an extreme fine-grain developer is not available.



By EARL THEISEN

Over at Paramount in Harry Cottrell's Still Department is a new photographic device for glossy prints. It consists of a large drum of highly polished chromium. As the drum revolves the prints are automatically pressed in contact and, before the drum has made a complete revolution, the prints are dried with a high gloss. In order to get this speed of dryin the drum has an internal steam jacket, the steam being maintained constantly by a controlled gas jet. The device which is operated by one man can turn out two hundred and eighty prints an hour which is four times the number by the old method of ferrotype tins. And, of course, there is no bother of polishing and laying the prints to dry as is necessary by the old method. The great demand of newspapers (I believe Paramount Studios send photographs to about three hundred newspapers daily), necessitates a speedy method of turning out glossy prints.

I just read a seven page account of the research work that went into "Cleopatra." With all the research those researchers had accumulated, the fine technical staff and the good cast, one would expect a masterpiece—a film to go down in history among the great pictures. "Cleopatra" should have been the biggest picture yet. It should have been a "spectacle" with a soul, but was it?

Speaking of directors. The list of Hollywood's best directors includes Lubitsch, Von Sternberg and De Mille. Personally I include Van Dyke and Capra in that list. These two directors are accurate and true to the social codes, yet they add life and zest to their films. Van Dyke's "Eskimo" never grossed big money, of course, yet a finer picture of the Eskimo has never been made, and the studio did not lose by making it. Every person who saw the picture will never forget the thing and will always understand a little the problems of the Eskimo and his customs. Frank Capra who made "It Happened One Night," along with miles and miles of other good films, needs no further praise.

Victor Schertzinger, the director of "One Night of Love," is convinced that the ways of radio are indeed strange. Recently he appeared on the air waves and, being a composer, he played several of his own numbers. One of the numbers he wanted to play was the theme song of his picture, "One Night of Love" which he composed himself.

"Sorry," said the radio production manager, "But you can't use that song."

"But I . . . I wrote it," stuttered Schertzinger. "You mean-mean I can't play a number I wrote myself?"

"It's a restricted number and you can't play it without the permission of the Composer's Society," insisted the radio fellow. "However, if you will wait until after your own program, Rudy Vallee will be on the air and he's going to play it."

Mr. Schertzinger asked for a glass of ice water.

A camera that will bounce has been invented! Two Bell & Howell Eyemo Cameras fell from about 60,000 feet and are only little damaged. In the recent ascension by the National Geographic Army Air Corps Stratosphere expedition which began at Rapid City, South Dakota, and ended, as a result of a forced descent at Holdrege, Nebraska, the two cameras fell with the gondola a distance of eleven and one-half miles.

Captain A. W. Stevens, U. S. Army, together with Major W. E. Kepner, and Captain O. A. Anderson, of the flight personnel, had intended to take movies of the stratosphere. No movies were taken.

The Eyemo, a light camera, was chosen. One camera was equipped with a 6-inch lens and the other with 3¾-inch lens, so either large or small pictures of whatever happened to be found could be taken. The photographing was to be done through a porthole in the gondola. The porthole was fitted with pieces of optical flat glass through which the cameras could photograph. The cameras were automatic so the pictures could be taken without the attention of an operator. The film taken along was sensitized to infra-red to be used in conjunction with deep red filters. This was necessitated because the atmosphere at that altitude could not be penetrated photographically. In fact, the eye can't see through the depth of atmosphere to observe the earth from that altitude.

By infra-red rays it was the hope to penetrate the atmosphere and photograph the earth from different altitudes.

Regarding the condition of the cameras, one was practically undamaged, while the other had a number of dents and is minus a lens. It is thought the lens penetrated the ground on striking the earth.

When a cartoon Silly Symphony is photographed in color, three negatives are taken. One for each of the three colors, red, yellow, and blue-green. From these three negatives, the color cartoons are made. Walt Disney and his staff paint the cartoons in the color desired and then the three negatives are taken which photographically record the color values. The three negatives each record the amount and extent of its particular color. On the yellow negative are all the yellow objects; on the red are the red ones and so forth.

From the three negatives are made three prints on a special stock which is called a "matrix." This matrix is then dyed to represent the color of which it is a record. The yellow matrix is dyed yellow and bears a record of all the yellow objects, etc.

The three matrices are then individually printed on a master positive. One after the other of the three is printed in register on the same film which when completed represents a combination of the three colors in the originally painted cartoon.

The International Photographer is the best magazine buy in the motion picture industry at \$2.00 per year.

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WORDS *fail!*

—but the picture convinces!

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THE RELATIONSHIP BETWEEN CONTINUITY AND CUTTING

Part I

(Paul E. Bowles is a former student of the Department of Cinematography at the University of Southern California, and is now actively engaged in the industry in which he is so intensely interested.—Editor's Note.)

16mm

FOR the amateur it is doubly necessary to stress the relationship between cutting and continuity. Cutting too often inspires needless fear in the amateur. If you will learn to regard cutting in the same thought with continuity, and see the two in this relationship you will iron out much of your trouble:

- I. Continuity in the correct scenario is the cutting plan on paper—a preconceived cinematic arrangement of shots.
- II. Cutting, actual cutting, is really only a mechanical process through which you blend the film strips one into another so that the conjunction does not greatly disturb the eye, nor above all, disrupt the attention of the spectator.

You will find that if you thoughtfully plan a story's continuity, using the artistic resources of the cinema in presenting an idea, that there is basically only one expressive cutting plan that will do justice to your idea. There is only one build-up of shots that will clearly and powerfully put over your characters and story, that will really interpret your conception of the drama. Consequently if you thoughtfully lay the ideas in a scene one upon another, continuity will become merely the inevitable outcome of a well ordered train of thought.

After you have systematically laid out your story with regard for the value of its parts and their positions relative to one another, you must have had some vision of the actors' moves and the various camera set-ups. However, in proceeding with the shot by shot continuity, you must remember that the camera and actors are only the resources of the motion picture; like the oils on a palette they await the artist with an idea to express.

From the continuity standpoint, to most clearly express yourself with the resources of the cinema, you must understand and account for their inherent value in relation to cinematic construction.

Camera as a Resource of the Cine-Continuity

In art and in drama we must *select* from passive existence moments of great intensity which epitomize the trend of the times, or contain the essence of some great drama.

Just as the man using oils must express himself within the limits of the frame, and must *select* from life a portion which will make up a meaningful "idea unit," so must the cine-artist select "idea units" for he also has the frame as a limitation. The space within the frame is the most important element that the camera, as a resource to the continuity man, has to offer; for it concentrates the spectator's attention on the "idea unit"—*the most expressive portion of a scene at a particular time.*

In the cinema the spectator accepts a new world, a new space boundary, the limitation of the frame. This new world is the world of filmic space, a world in which

essentials alone are seen, in which all movement and all objects have special meaning—a world in which the spectator is conscious of the movement of thought and the inevitability of circumstances, because he has concentrated before him both the action and the result of action, the experience and the development. It stands to reason that the space within the frame should never be filled with objects or action which detract from the dramatic "idea unit" within it. The spectator can only be affected by what he sees on the screen, and that must be clear and precise. It is only through the medium of the projected frame that you can gain his attention and interest, and later his belief in the situations of the story.

Other attributes of the camera as a resource of the continuity man are:

- I. Its ability to change focus. For instance, to pull into focus a character hitherto in the background, bringing him to the special attention of the spectator.
- II. Its ability to pan and tilt when on a freehead.

Important in this connection too are the possibilities offered the camera mounted on the crane or dolly; these offering the chance to stay on the point of intensity when it is expressive of your conception of a scene to use extended movements.

Movement of the Material in Relation to Filmic Time as Resource of the Cine-Continuity

Added to the limitation of the frame, we also have in the cinema the limitation on time in telling a story—generally about sixty minutes. This limitation is actually a resource of the cinema, and the pillar of continuity construction. The necessity for condensation of time makes it possible to set the "idea units" next to one another.

Because of compression and intensification of time, situations occurring days apart or miles apart must be shown next to one another. It is because *what we see we believe* that we accept these peculiar demands of the cine-continuity. The spectator is not perturbed if a continuity of shots discloses a blossoming tree superimposed by a naked autumnal tree and again by a snow-packed tree, and then proceeds with winter scenes only a moment after the characters have been romping in some blossomed dell. Minute changes from day to night, the spanning of a continent or an ocean to see another answer a long distance call do not challenge our distrust.

If the movement is continuous and progressive within the frame, *and blended from one shot to another*, we accept the compression of time. We have grown accustomed to regarding only the space within the frame limits, and are more intent on the area and movement there-

in than of the area and movements within the room or location in which the film is shot.

We do not think of the actual time it would take to look at and walk to a person so that we could see him in close-up, if we suddenly see before us on the screen a close-up reaction of someone a little way across a room. Though seconds are clipped off the time for a crossing by moving a character out of one frame, pausing, and bringing him into another, we accept the compression because the movements fall next to one another smoothly and progressively. *We accept Filmic time!*

Far too often it is the adherence to real time and space that makes the cine-drama lose its power. *The cinema is an essence—a compression of time and space, in its whole as well as its part!* Far too often in the development of pictures real time and real space are covered religiously, accounting for all the movements, and all the space and time covered within a scene. The action is shot from many angles and covered in long-shot, medium-shot and close-up positions. This may be a *protective method* of shooting, but, at best, it becomes a cold *recording* of the scenes. Consequently, the mass of film dumped on a cutter to be compressed and set into a filmic unit becomes only a technically perfect rendition of a *recorded* sequence.

The build-up of shots which are a result of the *protective method* of shooting shows a lack of systematic vision in the continuity man, and a lack of understanding of the powerful resources at hand. The design of shot juxtaposition which should interpret an interesting cinematic conception of the scenes is not present as the outcome of this type continuity development.

Under these conditions of profligate over-shooting the cutter becomes more than a technician who blends a continuity of shots joining each at the right frame; he becomes, strangely enough, the continuity man and the cutter at the same time.

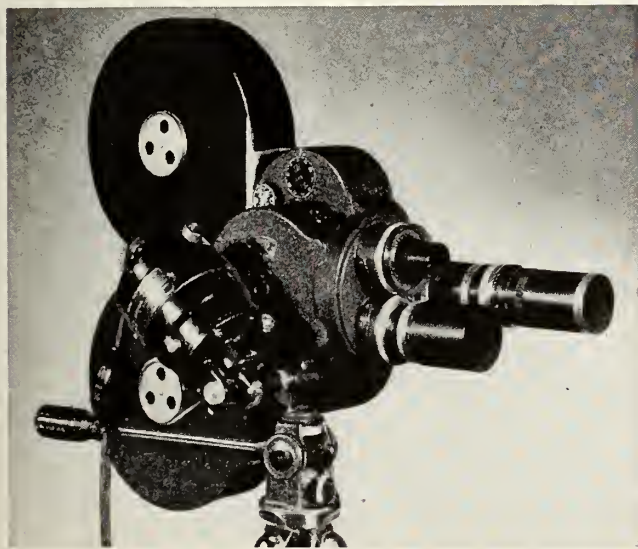
This dual role exists because it is necessary for him to select out of the many set-ups and angles, and develop the succession of shots which will most efficiently put over the movement in, and the thought behind a scene. This "fixing it up after it's shot" method does not put the cutter in his proper relation to the film's development.

If the cutter is deluged with film and there's no thoughtful *filmic presentation* of the scene, then someone on the planning side is falling down on his job. This situation is both expensive and non-filmic, and is, therefore, not an advantageous procedure for the amateur.

In November issue will follow an article dealing specifically with "plotting out" a scene for shot by shot continuity.

THE JUNIOR NEWSREEL

Ray Fernstrom reports that his Junior Newsreel is off to a signal success. The first showing of the Newsreel was made at the Mirror Theatre early in September and the only criticism from any source was that the preview was too short. Six hundred members of the Parent-Teacher Association were present and they unanimously agreed that the footage shown was of the sort of material desirable for such a newsreel.



It was an Eyemo, anchored to a motor-cycle, that took the moving race track shots in Warner Bros.' "Six Day Bike Rider," starring Joe E. Brown.

BELL & HOWELL COMPANY

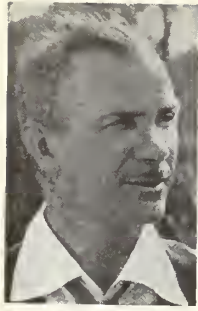
1849 Larchmont Ave., Chicago; 11 West 42nd St., New York; 716 North La Brea Ave., Hollywood; 320 Regent St., London (B & H Co., Ltd.) Established 1907.

The World is opening up for EYEMO Owners

With the technical advance which has been made in applying sound to silent films, and with the world crying for short subjects, the Eyemo cameraman stands on the threshold of big things for himself. The stage is set, ready for "Camera!" and the market is waiting for the finished product.

Portability, versatility, and technically perfect results are what you buy in Eyemo—the finest 35 mm. hand camera ever made. Small and compact, the Eyemo may be operated by spring motor, hand crank, or electric motor. 100-foot daylight loading spools may be used. 200- or 400-foot magazines may be attached. Eyemo has seven film speeds, from 4 to 32 frames, or from 8 to 48 frames, including sound speed.

Our Eyemo booklet will tell you what you want to know about portable 35 mm. equipment. Write for it.



Estimating the Cost of a Motion Picture Production – The Work Sheet

SO much interest was shown in my article in last month's magazine, regarding production expense, that our editor has prevailed upon me to give full particulars of "estimating the cost of a production."

It is not fair to the producers to give the cost of pictures already made, but in place of this information I can show exactly where the money goes and if you are contemplating production with your own money, you will at least know before you start how much money to have on hand, before you spend all of it and then find out you didn't have half enough. This will save you embarrassment and perhaps serious difficulties.

It is surprising to look back over the long list of aspiring producers who have tried to make pictures but have been only partly successful or a complete failure. Some of these should have been able to realize the chances they took when they laid down their cash or that of somebody else.

In the first place a producer generally decides to screen a story written by someone else, directed by, photographed by, edited by, and sold by people he scarcely knows.

The modern miracle is to take a thought and produce this thought in two dimensions (psychologically three dimensions) on a screen before your eyes, preserving all the life, emotion and entertainment that the thought generates. All people are not blessed with the power of visualization and the patience required to perform this miracle; many are called, but few are chosen. On the other hand I have seen a fair story made into fine entertainment, just because the producer was wise in selecting the right people to do the work and supplied sufficient funds to carry everything through to a satisfactory finish.

If a re-take or added scene will benefit the production, certainly it should be made. However, deliberately overshooting a production is wasted time and money. I know one director who covers a sequence in long shots, then in medium shots, then in close-ups and then in inserts. This runs up the film and laboratory expense, and if he would just stop and realize "no matter how many shots he takes of a certain action, he can use only one of them, or at least a certain part of each one."

The usual script runs 300 to 400 script scenes, some of which are master scenes and need to be broken up with two or three shots. A 21-day schedule production will average 20 script scenes and 10 or more added scenes each day, with the customary two or more takes on each scene.

The proper procedure in making an estimate of a production is, first, to break down the script into its many parts, itemizing the characters, what sets they work in, wardrobe they wear, working props they should have and whether it is a day or night sequence. The best way to keep track of this is by making a production schedule on a large sheet of cardboard, marked off in

squares, with the set names across the top of the sheet and the actors' names down the left side of the sheet; a small cross in the square where the actor works keeps an accurate record. Wardrobe changes can be numbered and just the number marked down keeps track of this item. By this production schedule you can group your sets and actors in the most economical way.

Keeping in mind to use your expensive players and expensive crowds, these shots should be made in the shortest possible time. Close shots and inserts can be made later. If your story has many exterior scenes, it is wise to have an interior cover set always ready in case of inclement weather. If you have exteriors and interiors to do on the same day, do your exteriors first, then if the hour becomes late before your day's work is over, your lights will carry you through without delay.

If this procedure is reversed you can readily see how your afternoon sunlight might leave you without the day's work being completed, thereby causing the company to come back the next day.

Some of the items I have listed on the work sheet can be grouped together under a single heading, yet if they were not segregated something would be overlooked and the estimate would be short, which is a serious matter when the budget is closely figured.

Some of these items can be further itemized, such as set construction and unless the estimator understands construction, he had better consult some art director before giving final figures. The same is true of the camera and the electrical departments.

In large studios each department is furnished with a copy of the script and estimates are made by the department head. These figures are later checked and totaled by the production office.

Contract and special process refers to Williams or Dunning or other process, which are protected by rigid patents.

There are some items listed that might not be used very often, but if the reader is making a series of pictures he is sure to need reminding about them.

It will be seen, therefore, that the greatest service a work sheet can be is to remind one about no end of little things which probably would be forgotten in the rush of work.

WORK SHEET

- Office rental.
- Office equipment rental.
- Office lighting.
- Office heating and cooling.
- Office telephone rental and tolls.
- Office telephone and stenographic salaries.
- Office accounting salaries.
- Office supplies.
- Office transportation.
- Office meals.
- Office miscellaneous expense.
- Studio rental.
- Production supervisor salary.
- Story cost.
- Continuity writer salaries.

By PAUL R. HARMER

Typing and supplies.
 Research expense.
 Experimental expense.
 Film and screen tests expense.
 Director salary.
 Stars' salary.
 Supporting cast salary.
 Extra talent salary.
 Musical director salary.
 Copyist and supplies—salary.
 Music license fees.
 First assistant director.
 Second assistant director.
 Script clerk.
 First property man.
 Assistant property man—salary.
 First grip.
 Second grip.
 First cameraman.
 Second cameraman.
 Extra cameraman (process and seconds).
 Still man.
 * * * * *
 Motion picture camera equipment rental.
 Still picture camera equipment rental.
 Blimps, perambulators, cranes, reflectors, diffusers, parallels,
 centuries, etc.—rental.
 Process projection machine rental.
 Process projection machine operator's salary.
 Process screen rental.
 Contract work, special process.
 * * * * *
 Sound recording engineer's salary.
 Assistant sound recording engineer's salary.
 Sound recording equipment rentals.
 Sound equipment—miscellaneous expense.
 Sound recording royalties.
 * * * * *
 Art director's salary.
 Draftsmen's salaries.
 Set designing material and blue prints expense.
 Set rentals and location fees.
 Set construction labor.
 Set construction material.
 Set construction in miniatures.
 Set construction—scenic and painting.
 Spot light platform's labor.
 Spot light platform's material.
 Set dressing rentals.
 Set dressing—labor.
 Set dressing—manufactured.
 Set dressing—lost and damaged.
 Set watchman.
 Set striking labor.
 Transportation for men and materials.
 * * * * *
 Set lighting generators.
 Set lighting current.
 Set lighting equipment rentals.
 Set lighting setting up labor.
 Set lighting operation labor.
 Set lighting striking labor.
 Set lighting globes, carbons, replacements and purchase.
 Set lighting transportation for men and equipment.
 * * * * *
 Diving equipment, tanks, wind machines, lightning ma-
 chines, rain, snow, fog, airplane and special effects—
 rental.

Extra labor for operating special effects.
 Material for special effects purchased.
 * * * * *
 Wardrobe designer—salary.
 Wardrobe tailors.
 Wardrobe checkers.
 Wardrobe material purchased.
 Wardrobe rentals.
 Wardrobe—lost and damaged.
 Wardrobe purchased.
 * * * * *
 Hair dresser—salary.
 Make-up artist—salary.
 Make-up material rented.
 Make-up material purchased.
 * * * * *
 Working props—rentals.
 Working props—manufactured.
 Working props—purchased.
 Working props—lost and damaged.
 * * * * *
 Horses or animals rented.
 Saddles, vehicles, harness, etc.—rented.
 Feed for animals.
 Caretakers' salaries.
 Transportation for caretakers and animals.
 * * * * *
 Picture negative—raw stock.
 Picture negative—developing.
 Picture positive—raw stock.
 Picture positive—printing and developing.
 Sound track negative—raw stock.
 Sound track negative—developing.
 Sound track positive—raw stock.
 Sound track positive—printing and developing.
 Composite print—raw stock and developing.
 Still negatives.
 Still prints.
 Titles painted, made up and photographed.
 Stock shots purchased.
 Optical printing and wipe-offs, salaries and expense.
 Sound dubbing salaries and expense.
 * * * * *
 Editing salaries.
 Editing equipment—rented.
 Editing—miscellaneous expense.
 * * * * *
 General transportation for company on location.
 Standby cars and trucks.
 Special cars and hauling.
 Steamship, railroad and airplane fares.
 Hotel expense.
 Meals at studio for overtime work.
 Lunches for location.
 * * * * *
 City license.
 Negative fire insurance.
 Compensation insurance.
 Special insurance.
 Petty cash.
 Unclassified expense.
 Preview expense.
 Release prints.
 Duplicate negatives.
 Shipping expense.
 Exploitation expense.
 * * * * *
 Added expense throughout production because of overtime.
 Sales expense.

METROTONE ON ITS OWN

The Hearst Metrotone News announces that on October 1, it will begin to operate under direction of its own staff and with up-to-date, specially made equipment, the chief feature of which will be Ford V-8 sound trucks.

During the past five years Hearst Metrotone News has been photographed by Fox Movietone News and ninety percent of the new staff will be made up of members of the original staff who operated Metrotone before Fox took it over.

Among these men are Joseph Hubbell, Ray Fernstrom, Roddie Green, Herman Stockhoff, U. K. Whipple, Ariel Vargas, "Newsreel" Wong, George Lyng, Sam Greenwald, Norman Alley, Teddy Rickman and K. C. Brown.

Mr. Hubbell will take up the task of Western Editor and M-G-M will release as before.

Hearst Metrotone News has already scored a scoop by engaging the popular Edwin C. Hill of radio fame to handle its business at the microphone.

One Hundred Percent Arc Lamps

By WALTER STROHM



Batteries of the newly developed silent arc lamps were necessary to film the Ice Cream color fantasy of "Kid Millions," Eddie Cantor's fifth annual screen musical comedy for Samuel Goldwyn. The new three-tone Technicolor process was used for this novel sequence.

IF the executives of the United Artists Studios were to ask: "Is it practical to use arc lamps exclusively in the production of a major feature," the answer would be positively in the affirmative. Large quantities of arc lamps were used in the Technicolor sequences of the "House of Rothschild" and also in Eddie Cantor's picture, "Kid Millions." In most of the scenes the sound and pictures were taken together. Where the sound was added later it was because of the humming of hundreds of youngsters—in the Ice Cream Counter scene in "Kid Millions"—and not due to fear of humming of arc lamps. If proper precautions are taken it is practical to utilize the present arc lamp equipment in large quantities; however, a reasonable appropriation for bringing the equipment up to date will cut the cost of operation considerably.

For the past several months there has been a growing demand on the part of cameramen for 80 ampere rotary arc spots and for sun arcs, but it was not until Darryl Zanuck, of Twentieth Century Pictures, decided to photograph a part of the "House of Rothschild" in Technicolor, that we had the opportunity of using all types of arcs in large quantities.

The Reception Hall set in the "House of Rothschild" contained 16,000 square feet of floor space and the lighting plan called for the following equipment: 99 80 ampere rotary arc spots, 42 24" sun arcs, 16 36" sun arcs, 40 arc broadsides, 25 arc scoops, and 28 effect lamps. For this particular set it was necessary to rent

considerable outside equipment which also had to be adapted to sound requirements.

The preparation work included a thorough inspection of the studio's arc lamps. Each lamp was fitted with a snap switch so the operator could cut off the arc control motor during the actual "take" if he found it necessary to do so. The arc control motors were equipped with special carbon brushes to eliminate the possibility of squeaking from that source. The contact brushes were well cleaned and graphited. Electrolytic condensers were connected across the line in the generator room, and a number of choke coils secured for use on the set. The new type broadsides and scoops were obtained because of their silent features and increase light output.

The key electricians were picked for their previous experience with arcs. Robert Comer, set electrician, on the "House of Rothschild," and James Portevin on "Kid Millions," took the responsibility of seeing that the equipment not in perfect condition, or equipped with cutout switches, was kept in the background or removed from the set.

It was a reasonably simple matter to meet the lighting requirements of Ray Rennehan, in charge of Technicolor photography, because of their accurate methods of light measurements. The problem of the sound department, however, promised to offer some difficulties. To bring this under control choke coils were connected to the lamps located near the microphones, some lamps were shifted around and the operators graphited the carbons

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Completely DEPENDABLE

THE dependability of Eastman Super-Sensitive Panchromatic Negative is not based entirely upon its well-known uniformity. It is the original, inherent quality of the emulsion...its constant ability to help producers and cameramen make the most of every picture...that *completes* its dependability...that seals the acceptance which this famous film enjoys. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-Sensitive*
Panchromatic Negative

Impressions of the New Akers 35mm Hand Camera

By WALTER BLUEMEL



INQUIRING into new mechanisms of any kind has always had an almost irresistible allure for me and all the more so if they happen to be of a photographic nature. So the opportunity to dig into a new camera afforded me all the mental pleasures of a mechanically inclined "little Jack Horner" and I only hope that I can, within the capabilities of my limitations, pass them on to the reader in the form of printed words.

In the first place the New Akers Camera is not very impressionistic from all exterior appearances. It is only a small cubical black case measuring $4\frac{1}{2}$ inches by 5 inches by 7 inches tall. The magazines, which are of the exterior type, are attached to the back of the camera. Three lenses on a rotary turret are mounted on the



The versatility of the Akers camera is a joy to the cinematographer who has to move rapidly in difficult places or take desperate hazards in the air.

front and a tiny electric motor on the side and that completes the picture.

It is only when you open the door to further explore its "innards" that anything noteworthy is noticeable. Then it is immediately apparent that this is a professional camera. Its gleaming, exquisitely finished machine work denotes that it is made with the same fine precision that one sees in the larger studio cameras. However, here the semblance changes because there are several vital variances between this camera and any of the large cameras that I have handled. Quickly noticeable is its light weight (approximately 16 pounds) with everything on it, magazines, motor and all.

Closer inspection reveals that the "works" or the mechanism is built entirely in a self-contained unit which is not in any way connected with the case. Four separate and entirely insulated screws hold the mechanism firmly in its bedding of sound deadening, insulating material. No shaft, bearing or moving part is attached to the case, thus preventing any possibility of "telegraphed" sound from the interior of the camera to the case outside. In fact the only thing that protrudes to the outside from the mechanism is the main driving shaft and even the bearing containing this is not fastened to the

case but extends into its little silencing gear box from its suspension from the internal mechanism.

While there is no exceptional claim as to the silent running of the camera, nevertheless it is surprising how silent it does run. It can be shot without any covering at all on the majority of exterior scenes where extraneous sound is present. If real quiet operation is desired while close to the "mike" a covering device is resorted to that might be described as a sort of "barney" but in truth it is a little quilted slip-over covering closely resembling what I remember my grandmother called a "tea caddy" which she used to slip over the tea pot to keep it warm.

This arrangement still allows it to be used as a hand camera and yet gives the user flexibility of operation heretofore unobtainable. I might mention here that while it is being used in connection with the synchronous sound motors that the wild motor (which is instantly disconnectable) is replaced with a silenced flexible cable which in turn is connected to the synchronous sound motor. The sound motor is contained in a padded aluminum tube and when being used as a hand camera is slung on the photographer's back, the flexible cable thus allows the cameraman the full freedom of a hand held camera while still connected in synchronization with the sound motor. This is quite a novel arrangement but entirely practical inasmuch as the undesirable and restrictive weight of the sound motor is slung on the back where it is not noticed at all and the flexible cable allows full freedom of operation.

Under the same conditions when being used on a tripod the sound motor is slung underneath the tripod and the cable again allows almost unlimited freedom in freehanding. So much for its operation.

Delving further into its mechanism, we find that it has something that no other hand camera has, namely, registration pins. These pins engage the exposing frame or picture at the next sprocket hole below the picture and operate through the front of the aperture plate. Inasmuch as these pins are made to the highest standard of precision, this camera should prove very popular with the globe-trotting cameramen as a background camera if for no other reason than its extremely light weight, and as to the "screen ride" of its pictures it is as rock steady as any other large camera made. In fact I was shooting the Akers Camera on a production where the location called for a herd of cattle stampeding through a stream of water in a narrow ravine and with it was able to get into positions that would have been extremely difficult if not impossible for the two large production cameras which were used on the picture. On this same picture I used the camera to get a shot of a stunt man descending a rope suspended over a high cliff, from a position that would have been impossible to reach with the big cameras requiring a standard tripod. As it was, much valuable time was spent in lowering cameras and equipment to the most advantageous point possible while I easily and quickly carried the little Akers camera down the narrow steep trail and still had one hand free to aid me in climbing over fallen

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AKERS

Featherweight Hand Camera Silenced for Synchronous Sound

Made in Hollywood

The World's Lightest
and Best All Purpose
35mm. Motion
Picture Camera

AN INNOVATION
FOR
NEWS-REEL MEN
EXPEDITIONS
EXPLORERS
AERIAL PHOTOGRAPHERS
SPORTSMEN AND
NATURALISTS
MOTION PICTURE
PRODUCERS
BOTH THEATRICAL
AND COMMERCIAL



The only electrically motor driven hand camera that . . .

1. Weighs less than 15 lbs., complete.
2. Has precision registration pins—insuring absolutely steady screen ride of picture.
3. Is silenced for sound work.
4. Has a brilliant, prismatic, highly magnifying focusing device—wherein the image is read correctly left to right and right side up. Thus enabling the operator to instantly check the actual focus against the reading on the micrometer focusing lens mounts.
5. Enables the purchaser to use the world recognized "Leica" lenses and mounts. The rotary turret is threaded to receive standard "Leica" lenses. This also allows the use of "Leica" sun shades or mattboxes and filters.

SPECIFICATIONS

Size—4¼" x 5" x 7".

Weight, complete with magazines and "wild" motor—14 lbs., 5 oz.

Magazine Capacity—200 feet.

Magazines—Exterior type, rubber insulated.

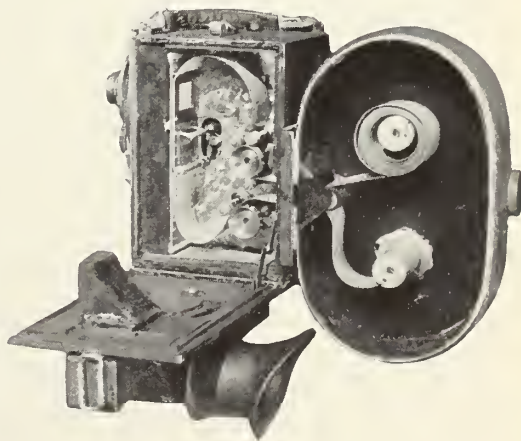
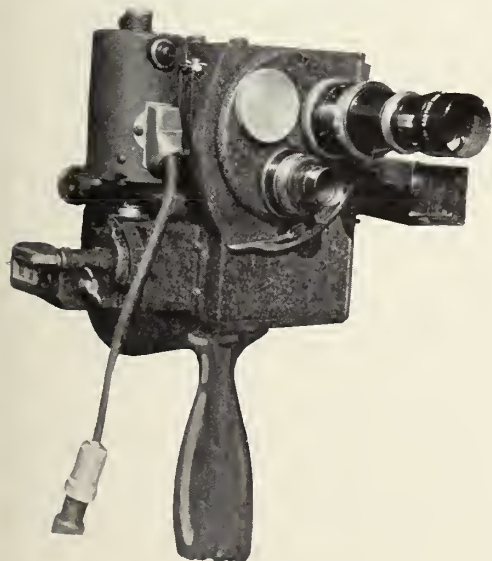
Case—Cast aluminum, machined, black crackle finish.

Three lens turret, threaded to receive "LEICA" mounts.

Shutter fixed at 165 degrees.

Registration pins, ground and hardened to fit standard B & H perforations.

Aperture Gate—Ground and lapped to film channel, then chromium plated. There are no pressure plates or pressure upon the film at any time.



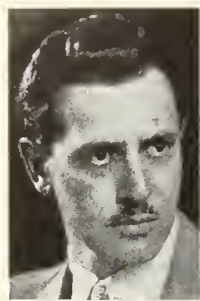
IRVING W. AKERS, one of Hollywood's best known freelance first cameramen, has spent over two years designing, developing, and proving this new camera under all conditions. This camera represents the greatest advance, to date, in motion picture camera equipment. In step with the industry.

AKERS CAMERA COMPANY

Post Office Box 1815

HOLLYWOOD, CALIFORNIA

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A FEW WORDS ABOUT SUNSHADES AND FILTERS

SUNSHADES AND FILTERS. Such simple little devices, yet how often they are completely ignored or misunderstood by the amateur photographer! Trust the professional cameraman, however, to appreciate and make good use of these gadgets. If you happen to be one of the clan who use these devices with success, you may go now, and skip the rest of this article, for it is aimed definitely at those workers who have so far thought their use superfluous, and for tyros (beginners, to you).

Let us first consider the sunshade because it is of greatest importance—I mean to say that no exposure should ever be made without one, whereas there are times when a filter is not favorably indicated. The sunshade physically is any device which protects the lens from stray light-rays and permits only the image-forming rays to pass through the lens and thence onto the emulsion. A sunshade which is one hundred per cent efficient is an impossibility, but one which may be considered as being eighty per cent efficient is easily possible. It must be remembered that when a lens is pointed at an object, the light reflected by that object travels through the lens, thus forming the image on the emulsion. But, aside from the image-forming light, we must always contend with extraneous light such as is reflected by various other objects in the vicinity. This light, while serving no purpose for the making of the picture, finds its way to the lens and is in most cases carried to the emulsion along with the image-forming light. Needless to say, this unwanted light has its effect upon the emulsion, causing a usually faint fog, and hence dulling the picture image.

With an abundance of such extraneous light, it can readily be appreciated that no little fog is present in the developed negative. The fog itself may not be readily noticeable, but it certainly does take its toll in flat, dull-looking negatives. The average developer produces a sufficiently high fog-value by itself—why increase it wantonly?

At the seashore, on sandy beaches, on the water, and in the mountains, non-image-forming light abounds in tremendous amounts, hence a sunshade is all the more important at such places. Light may be regarded as streaming in from all directions, and it is the function of a practical sunshade to prevent its entrance into the lens as much as possible, hence no exposure should be made without a generous shade over the camera lens.

The sunshade likewise permits the camera lens to be more nearly pointed towards light-sources (such as the sun, for example) which usually results in better roundness and depth in the picture. Without a shade, the lens must be carefully protected, and back-lighted scenes are impossible. In short, there is no earthly reason why a shade should not be used, and a hundred why it should.

I have alluded to the fact that stray light fogs the emulsion somewhat. In other words, the picture itself is dulled and lacks contrast. A picture which was made with the lens properly protected, however, has snap, brilliance, and sparkle. If you doubt this, just refer to "*Factors Which Affect the Contrast of a Lens Image in the Motion Picture Camera*," by Clifton Tuttle and

H. E. White (Communication No. 329, Eastman Kodak Research Labs.). You will find good reason to use a sunshade on your lens, proved to you in figures and formulas. If you are still unconvinced—then better give up photography altogether.

Now the problem presents itself—providing I have so far gotten you to the point of admitting that you should have a sunshade—as to what kind of a shade to get. There are two easy ways out; either buy a manufactured shade or make one yourself. Of the former there are many makes and varieties. Usually a sunshade is made to fit a particular lens, so that if you have a number of lenses of varying outside diameter you may find yourself in difficulties in trying to get one sunshade to fit them all. However, even that is possible, for one enterprising manufacturer offers a device which can be placed in front of different lenses of various sizes. This device may be obtained from the Camera Supply Co., Ltd., 1515 N. Cahuenga Avenue, Hollywood, Calif. Another sunshade which has adjustable characteristics is the Rhaco. By means of a spring-clamp, lenses of various diameters may be accommodated. This shade is distributed by Photo Utilities, Inc., 152 West 42nd St., New York City. A third manufactured product is known as the H. C. E., and may be obtained in numerous styles and sizes to fit any lens. This one is a product of the Hollywood Camera Exchange, Ltd., 1600 N. Cahuenga Avenue, Hollywood, Calif. (Why are most of these useful accessories made in sunny California?) A fourth sunshade with universal appeal is the Woershing, handled by the Hugo Meyer Co. A fifth is the Willo, made and distributed by Willoughby's, Inc. But why go on? There are a number of excellent sunshades available, ready made. All you have to do is to know where to go for them. And of course most lens manufacturers offer special shades for their particular lenses.

A most desirable combination is one which consists of both a sunshade and a filter holder in one, and thus we find the H. C. E., Rhaco, and Willo, among others, of this type. The H. C. E. combination for the smaller sizes is a two-part proposition which unscrews. The filter is placed within the cup or receptacles made for it, and fastened in place by screwing back the other half of the unit. This idea is most practical, for it eliminates any possibility of the dropping out. In the larger sizes, the H. C. E. shade provides accommodation for the standard two-inch square filter in a metal frame-holder which slides in or out of the shade proper. The Willo, too, accommodates two-inch square filters. These are merely inserted in a slot provided for them. The Rhaco outfit is designed on different principles. The shade part snaps securely into the filter-holder unit, which is a circular holder, to which the fastening springs are attached. The shade in other words holds the filter in place. This equipment accommodates round filters in the several sizes in which the shade is available.

Sunshades are inexpensive enough. However, if you care to make your own, you can do it easily by securing some solid, yet fairly flexible cardboard and making a

By KARL A. BARLEBEN, JR., F.R.P.S.



Left—Like all good newspaper cameramen, Kip Ross constantly seeks picture material. The H. C. E. sunshade on his Plaibel Makina is plainly seen. You'll never catch Kip Ross without a sunshade on his camera.—Photography by Karl A. Barleben, Jr. Upper—How the picture of Ross was made, showing how low Barleben will stoop to get a picture.—Leica photo by Rosa Ross. Center—But newspapermen get their revenge—Ross shoots right back at Barleben.—Leica photo by Rosa Ross.

tube out of it—a tube which, when completed, fits snugly around the front of your lens. The roll is then fastened securely by means of lantern slide binding tape, Scotch tape, or similar material, so that the cardboard won't unwind. A simpler method is to get a pill-box, the mouth of which just fits over the lens. It is then necessary only to cut out the bottom of the box, and there is a sunshade. Or again, if you are handy with metal, a serviceable sunshade may be made from thin brass or tin.

But wait—it is not as simple as all that, after all. In making a shade, it is necessary to see that the bell or tube is not made so long that it will cut into the angle of the lens, thus vignetting the corners—or more. The exact length of the tube can be determined by setting the camera up and focusing upon an object upon the ground glass. Note carefully, when you place the home-made sunshade on the lens if the corners of the ground glass darken. If they do, it's a cinch that the tube is too long and is cutting off the corners of the picture. It must be shortened. Naturally the tube-length is determined by the focal length of the lens, and the style and shape of the sunshade. A shade with a flare to it towards the end can stand a greater length than one which is straight, or the same diameter throughout. These details must be worked out by each individual.

Not being particularly handy, but being fussy, I prefer to buy my shades ready-made. In that way I get a shade of durable metal, which is shaped properly and designed for the proper length in accordance with the focal length of my lens. Well, if you must know, my weaknesses in this matter are the H. C. E. and the Rhaco

—but this does not by any means disparage the others, for all of those mentioned are conspicuously popular, and besides, I have my personal likes and dislikes, just as you have. They may not at all agree with yours, hence I do not tell you what you should use—I only mention what I personally use. You can, and should, please yourself in this matter—a la Tristram Shandy.

Now that the question of sunshades is settled—I hope—let's for a few moments dwell on the subject of filters, and before we begin I might just as well confess that I shall not divulge anything really new, only a bit of common sense. My primary plea in this matter is in regard to the kind of filter to use. Again, if you are interested in my personal preference I would unhesitatingly say that I'll take solid glass filters every time, thank you. And I'll tell you why. To begin with, gelatine absorbs more light than does glass, hence we get a little more light through the glass kind—maybe not enough to make any difference, but still. Secondly, the filters which consist of gelatine cemented between two pieces of optically flat glass are not especially stable, especially in the tropics. The heat and dampness, once they get a toe-hold on the interior of the filter between the outer pieces of glass, play havoc. This is an unquestioned fact, nevertheless a British photographic magazine on reviewing one of my books in which I made a similar statement criticised me in no uncertain terms for the remark. The INTERNATIONAL PHOTOGRAPHER has in the past published numerous accounts, one of which I distinctly recall, in which a professional cameraman related his difficulties in the tropics with

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CINEMACARONI

(It's better with a little sauce.)

Sorry, son, you're on the wrong train.

Newspapers state that the late Speaker Henry T. Rainey kept himself physically fit by his untiring work with dumb-bells.

He should have been a movie director. That sort of thing pays big.

The police department was frantic last month because a nine-ton load of stolen dynamite was hidden somewhere in Hollywood. They were afraid it might explode any minute.

Probably figured Jean Harlow might walk by it.

A lot of people would get right up and go home.

And somebody would rush up to San Quentin to see if Mooney had escaped.

Studio officials couldn't be expected to turn a hair. A blow-up is all in the day's work to them.

But there'd be an epidemic of blasting pictures. They'd be censor-proof. Who ever saw a stick of dynamite with sex-appeal?

Come to think of it, so have I.

Where Eadie Adams, blonde radio blues singer, got this I don't know; and maybe it's just as well.

*Twinkle twinkle little star
Who the hell do you think you are
Shining up there so doggone bright
Just like an electric light
Bulb.*

All of which leads to the following technical problem: If a man who rents a room is a roomer, is a man in a tomb a tumor? And should a blues singer be known as a—that is, should a blues singer be known?

TRUTH DEPARTMENT * * * Don't miss seeing "The Thin Man." It is the most scintillating, fast-moving piece of sophisticated comedy I have seen in a long time. Bill Powell and Myrna Loy team it to perfection. I'm as happy as Myrna is to see that she is staying out of Oriental parts * * * Polo is becoming more and more the sport of cinema satellites. There's always a big turnout of celebs at any good match * * * Johnny Mack Brown had a birthday while he was working on "Police Ambulance," his first of a series of pictures for Columbia, and Mrs. Johnny brought him a birthday cake on the set. Johnny was so busy working that everyone on the set got a piece of cake before he did * * *

Everybody and his brother had a birthday last month. The cleverest party for a child I have ever seen was the one for Barbara Bebe Lyon, three year old daughter of Bebe Daniels and Ben Lyon. It was a Mother Goose costume party, held in the garden of the Beverly Hills home of Louella Parsons and Dr. Harry Martin. A big table was decorated with Nursery Rhyme favorites; the trees and hedges were all hung with hundreds of gaily colored balloons and fruit and lollipops and popcorn, while three tremendous birthday cakes were a la mode and I don't entirely mean with ice cream. There was a pony for the kids to ride and a grab bag and a puppet show and even a real merry-go-round. Barbara Bebe herself was Bo-Peep, complete with crook and sheep; and most of the famous children of filmdom, decked out in Mother Goosey Rhyme costumes, were there to do her honor * * *

Cute Jean Muir was as fussed as a novice when I photographed her recently at a popular cafe. She was worried about the people standing around watching * * * Milestone's picture, "The Captain Hates the Sea"—finally wound up forty-four days over schedule—enough time to make two extra productions. But all reports say it is to be a wow * * * Malibu is no longer the same old beach. The

recent storms have changed the contour of the beach front, and some of the stars nearer the water than they used to be *

*A magician
Doesn't have to go around wician.*

FIERCE AMBITION DEPARTMENT
See what the postman just brought:
Dear Sir:

Do you think I could be a movie star. Well you send me three of my best Stares if you could, I am trying to get Charles Rugles, Ger Rogers, and Goerge Raft, will you please try to get them. Will you wright every wuncup a wife and tell me if I would be a Movie ar or not. I could act pretty good. I wa to be a star so bad sometimes I bite m. Send as soon as you can.

Your Friend
C.

Latest quip, translated from the Hindu, is no reason:

"Mahatma! Mahatma! Mahatma!"
"Here's your hat, you little fool. An'm NOT your mother!"

An interview with Kay Francis quote her as saying: "I shan't marry again so long as I am acting in the films. Marriage in such circumstances doesn't give either party a chance."

Right. It keeps you acting every minute. And that's not fair under NRA.

ADD ALTERED PROVERBS:

The sins of the fathers are often tried even unto the fourth generation.

POT SHOTS AT HOLLYWOOD FIRE AT RANDOM † † † Not to mention any reason but it tickles my funny-bone to note that some of the gals that sponsor a certain famous as indispensable to a lovely smooth skin, of the ones with the worst complexions † † † A name I can't shake loose. It sticks in my mind like a burr in a blanket. Yakima Canutt † † †

SLOW SPEED EXPOSURE DEVICE FOR THE LEICA

A new attachment which gives shutter speeds from 1 to 1/8th second exposures on the previous models of the Leica has just been announced by W. Leitz, Inc., 60 East 10th Street, New York City.

The new slow speed device is especially useful to owners of Leica cameras other than the model F, which has these slow speeds built into its mechanism, as it makes possible slower automatic speeds by simply attaching the device to the camera over the shutter release button. Owners of Leica models A, C, D, and E will welcome this device because the slowest speed their shutters are capable of, automatically, is 1/20th second. Many have had their cameras converted into the model F because of these slower speeds. With this device now available, conversion is not necessary.

The slow speed shutter device is small, compact, and durable. It gives the speeds of 1, 1/2, 1/4, and 1/8 second. The regular shutter speed dial is set for "time," after which the device accurately gives the slower speeds. Provision is made on the device so that a Leica cable release may be used in conjunction with the release button.

Leica camera owners who desire the slower speeds, yet cannot afford the model F camera, should see this new attachment at their local dealer's. The price is \$17.40.

BASS ANNOUNCES

Bass Camera Company announce a new 64 page 16 mm. Film Rental Catalog. This catalog is unique in its fine offerings of rental films at low prices. Also a full library of sound on disc and sound on film subjects. Catalog will be mailed to anyone interested within a radius of 1000 miles of Chicago which is the extent of their film rental service.

Also Bass Bargaining No. 214 of 16 mm. apparatus is now ready. Copy cheerfully mailed upon request to the Bass Company.

B. & H. LIBRARY

The Bell & Howell Company announces the opening of additional branches of its 16mm. sound-on-film rental library—The Bell & Howell Filmosound Library—as follows:

Michigan Film Library, Detroit; Metropolitan Film Exchange, Seattle; J. G. Kretschmer & Co., Omaha; Hall Stationery Co., Topeka. The activities of this library are steadily increasing, especially with the opening of schools. Many schools are inaugurating a series of entertainment and educational 16mm. talkie programs.

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By ROBERT TOBEY

He West buys tickets to just about every public function and promises to appear. But she never does. The only way the star-gazers can glimpse her is by spotting the super-special black Cadillac town car she parks her upholstery in. A dilapidated petunia to Katherine Hepburn for ducking the news photographers at the circus. She went dressed in blue denim trousers a shirt, with huge dark glasses, and a black such hat pulled low. The few kids that suspected her identity and sought autographs she diverted with a guttural "Ged away! Ged away!" pseudo-foreign accents † † †

The strike situation in this country is wing.

ut it's not growing anything we can eat. Even my Grandfather's Clock is striking. Bh hands have quit.

's time somebody called for baseball rules. Tee strikes and you're out.

Sh on a Glendale building:
QUIET, PLEASE!
DOLL HOSPITAL.

PERSONAL NOTE TO OTTO PHOCUS: I got into your department in the last issue of the International Photographer. In return I'm presenting you with a "bird"—for your next ecological lecture. I found it in my raspberry patch.

(N. B. Let's start a scrap, you'n'me, Otto. My publicity agent says I need a good scrap to push me over.)

in studio daily schedule sheets, made up haily, parenthetical comments appended to sty titles often produce whimsical results. Pisto:

(IE NIGHT OF LOVE (Don't Call It Love) Oly, baby!

PART TIME LADY (Orchids and Onions) Which for which part?

THE CRIMINAL WITHIN (Produce the Body) The care of your own dirty work.

I'LL FIX IT (Temp.)

lly Sally thinks a censorship is an empty sang vessel.

FINGER NAIL REVIEW

(No space left on my thumb nails.) "DAMES," laddled out by the Related Warner Boys, is their latest extraval musical, in which Busby Berkeley opens the old Wonder Box again and out fly 350 pairs of aggravated ankles, a myriad melting melodies, hundreds of horse-car horse laughs, and most of the Warner Boys' gelt. Or they've been hoarding, the rascals. Ennihoo, in the main it's an amusing yarn, about an eccentric millionaire whose antics make the story. You'll like the picture, which does its best to star all of the following: Joan Blondell, Dick Powell,



Ruby Keeler, Guy Kibbee, Zasu Pitts, and Hugh Herbert. Kiddled all over the place, much to my delight, is the typical censor, played by Hugh Herbert, who, in the character of Ezra Ounce, won't touch a drop of liquor, but acquires a nervous stomach that can be soothed only by the potent ministrations of a certain elixir—which is about half alcohol. Ezra also thinks girl-shows a cardinal sin—so goes to them to see how bad they are.

I wish Warners would stop their habit of lugging in songs without benefit of clergy, rhyme, or reason. It is thoroughly disconcerting to me, when observing a sequence showing a young couple making love by a limpid pool, with civilization apparently miles away, to have a band suddenly strike up out of nowhere and have the young couple break smoothly into an obviously rehearsed duet. Maybe it is done merely to prove it's only a picture. It certainly dispenses with all realism as far as I am concerned.

Busby Berkeley is an even greater genius than he is accredited. The theatre stage shown in the picture is a small one, as anyone can see, but the massive machinery and mess of feminine pulchritude that Berkeley whips together couldn't be crowded with a shoehorn into anything less than a combination of the Winter Garden and the Hippodrome.

But I won't leave you with a bad taste in your mouth. It's a swell picture, even if you can't believe half you see. Ray Enright megaphoned well, wringing an ocean of laughs out of his situations. The camera work by Sid Hickox and George Barnes, was excellent, but not outstanding, except in the case of the Berkeley ensembles, which were so massive and complicated that they must have been nightmares to photograph. Remarkable studies in black and white, they are a great credit to the photographers and to Berkeley. I'm for more "Dames."

ANNOUNCEMENT EXTRAORDINARY!

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HOLLYWOOD HONEYMOON

the new SUPER-SERIAL starting next month on this page. It is a tale of glamour, of love in Hollywood and all over the world, including the Stratosphere. It is full of vitality. It is full of baloney. It is full of prunes. A little something for everybody.

Whip Out Your Binoculars!
It's on the Horizon!

S. M. P. E. REACHES TOP

Membership in the Society of Motion Picture Engineers has reached an all-time high with a total of 850 members, according to announcement made by O. M. Gunt, Financial Vice-President of the Society. The large increase in membership during the past year, amounting to more than 300 new members, is due in large measure to the widened scope of the Society's activities and to a reduction in fees. However, it is felt that the gain is due to some extent to better business conditions within the industry.

Plans for the semi-annual meeting of the Society to be held at the Pennsylvania Hotel, October 29 to November 1, are about completed. "The semi-annual banquet falls on Hallowe'en night," reports W. C. Kunzmann, Vice-President in Charge of Conventions, "so we'll observe all the conventions and have all the trimmings from roast turkey to pumpkin pie."



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What and Why Is a Gaffer?

(The Man Who Has the Lightest Job)

By BOB HUSSEY

It's really time that someone turned the spotlight on the fellow who always holds the spotlight on someone else.

He's another of the unsung heroes of the Hollywood studios—the gaffer.

Webster's Dictionary defines a gaffer as "an old man; an aged rustic; a master." The gaffer of the studio is neither an old man nor a rustic, but he is, indeed, a master. He's a master at the art of lighting.

The Chief Electrician on the movie set is he, the gaffer. Why he is called a gaffer no one seems to know. Some say that gaffer is defined in some dictionaries as a foreman, but why he isn't called a foreman isn't known. From the time of the first motion picture he has been the gaffer, and it's likely he'll always be that.

The gaffer is the cameraman's right hand man, his lieutenant. Back in the old days the gaffer was considered important enough to rate screen credit, but these days he isn't given the honor. His work, strangely enough, is much more important now than ever before, but—that's Hollywood.

The gaffer is the fellow who "lights" the set. He directs the placing of lights, the direction of them, the intensity, the diffusion.

He knows photographic lighting. He knows how to fix lighting for this purpose and that purpose. He knows how to get this effect or that effect. He knows make-up, shadows, angles.

Too, he knows the secrets of the stars. He knows why one star is never photographed from one angle or why another can't be photographed in certain poses. He knows these secrets of the stars and helps them keep them.

Directors, cameramen, actors and actresses all rely on gaffers, for their aid is invaluable in properly photographing a picture. When a cameraman finds a gaffer who works with ability, speed and artistic effectiveness it is likely that the two will remain associated over a long period of years.

Much time on production can be saved when the set is lighted quickly and properly. Some gaffers know so well the type of lighting sought by their cameramen and directors that they can go about making ready a set long before either of them are on hand. Then, when all is in readiness for the scene, a quick glance about to check last minute details is all that is needed.

Some gaffers win the undying gratitude of screen players by knowing how to get best lighting effects without using too many lights. The minimum of lights saves those beneath them from the sweltering rays usually found on movie sets.

Gaffers at the Warner Brothers-First National Studios have found that less lighting on sets makes for more natural lighting, for the subjects seem more natural to the eye when seen on the screen.

Just as certain stars ask for certain directors, so do cameramen request certain gaffers. Larry Kennedy, Frank Flannigan and Claude Hutchinson have long been working at Warner Brothers-First National and each possesses a long list of pictures to his credit.

On the movie set the gaffer is the one who directs the electricians who walk above on narrow catwalks and handle the huge lights, just as he supervises the fellows who handle the "floor lights" on the set.

The gaffer sees the "rushes" on the picture each day during filming and with the cameraman works out proper details of lighting. It is no secret in Hollywood that many moving picture photographers who have gained fame for their artistic endeavors attribute most of their success to the aid of efficient gaffers.

Just as every scene in a picture requires a different type of photography, so does each scene have its individual type of lighting. Long shots, medium shots, close-ups, day shots, night shots, storm scenes—each must have its individual treatment.

The gaffer has his own language, too. A "baby" isn't an infant in the language of the gaffer. A "baby" is a small spotlight used for high-lighting purposes. An electrician is termed a "juicer" and a "spider" isn't a spider at all. It's a certain type portable electric switch. "Jack" and "Jenny" refer to no people in the vocabulary of the gaffer. A "jack" is just a hole at the end of an electric circuit into which a plug may be inserted to continue the circuit and "jenny" is an abbreviated way of saying generator. It is applied to a small portable generator frequently used on sound stages.

The large multiple arc lamp which hangs high over the set is termed an "ash can" and "twins" refers to double arc lamps when the gaffer uses the word. "Inkies" refers to incandescent lamps and "butterfly" is a silk-covered frame fitted over lamps to soften the light beams.

There is much more, of course, to the "language" of the gaffer, just as there is much more to his job than can be told in these few words. He is, take it from those who know, a very important fellow in the making of motion pictures even if he is hidden among the unsung heroes of the studios.

The bridgeman with his best man has nothing on the gaffer, either. The gaffer's assistant is known as the "best boy" wherever gaffers are found, and gaffers are found wherever pictures are filmed.

Fred Westerberg is beginning a new series of *The Cinematographer's Book of Tables* in November. The first book is now on sale by dealers throughout the world.

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Intolerance: The Sun Play of the Ages

By BILLY BITZER,

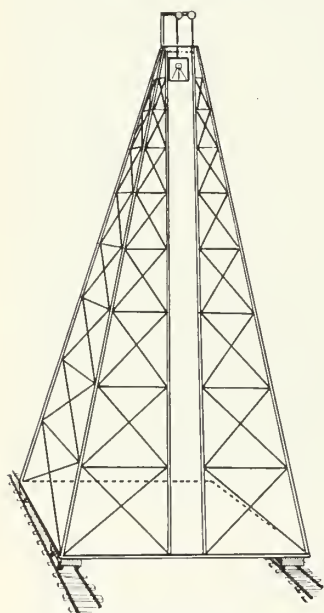
The Grand Old Cameramaster

“**I**NTOLERANCE” was made in Hollywood in 1915-'16 on Fine Arts lot, Sunset and Hollywood Boulevard, excepting the scenes taken of Cyrus' Army, which were taken at Nigger Slough, down toward Culver City.

Every bit of this photography was taken in sunlight, except the night fire scenes of the Babylon towers and walls. These were taken at dusk and with flares. No 24s, 36s, sun arcs or electric lights of any kind were used and, if you remember the picture, you can imagine the original figuring in the placing of sets, all of which had to be shot in sunlight.

An Amazing Dolly

One set, the Feast of Belshazzar in the Babylon period, was set three-eighths of a mile long and, in this scene, was used an amazing dolly that even at this time (and I do not want to belittle our present day marvelous photography and angles) has never been equalled for its effects and smoothness of operation. This dolly was one hundred and forty feet high, about six feet square at the top and some sixty feet wide at the bottom. It was mounted upon six sets of four-wheel railroad car trucks and had an elevator in the center. It ran upon tracks starting away back taking in the full



The biggest dolly ever built—140 feet high.

scene, or entire set, upon which there were five thousand extras.

Walls 140 Feet High

This scene, or set, had walls one hundred and forty feet high all around it, upon which were huge elephants, many in number. Some of the walls were braced with telegraph poles and there were horses and chariots upon them.

Ishtar, a figure of the Goddess of Love, which looked puny in the full set, was thirty feet tall.

This great dolly was moved backward and forward by some twenty-five men, while another staff operated the elevator until from full set it ended in a close-up of large figures of the Prince and Princess seated at the throne, a pair of doves harnessed to a little golden chariot, carrying love missives between them, and the whole moving so smooth as to be delightful.

In fact, ten years later about this scene Richard Watts said in the New York Herald Tribune: “In this episode there occurs one of the most effective uses of the moving camera I have ever encountered—the scene where the camera moves slowly up the steps of the Babylon Palace.” You see the effect was quite the reverse of the method in which it was photographed.

The Intolerance Way

In some of the pictures I see today, when I learn of the methods used, I wonder why, instead of the apparently roundabout way which looks so mechanical, they are not done in the simpler and more real and effective

“Intolerance” way. For instance in a scene showing apparently hundreds of chariots (Cyrus' army) rushing to war, we simply hooked our Cyrus' chariot to the side of our automobile, jiggled the shafts up and down (no horses on that one) and rode like hell in amongst all the other chariots. But more about this sort of stuff later. While I am at it this same writer said, when “Intolerance” was revived TEN YEARS LATER: “Here is photoplay pageantry that for richness of fine composition and general beauty is so impressive that it should make the producers of the expensive ‘Ben Hur’ to feel just a bit ashamed of themselves.”

How It Was Shot

This whole scene was made on only one hand cranked Pathe camera. Karl Brown did the cranking, seated underneath the Pathe, through a flexible shaft, and I did the handling of the tilt and pan cranks, looking directly through the Pathe eye-piece focusing glass in the back door of the Pathe on to the film, with a special eye-piece of rubber which fitted around my eye to keep the light from fogging the film.


The highest number of cameras used on the biggest spectacular scenes of the different periods were never more than four—all Pathes and, at no time in the ordinary scenes made in this picture, which took one and one-half years to photograph, was more than one camera used.

Karl Brown Enters


And right here I want to tell you about the wonderful assistant I had in Karl Brown, who was more than an assistant—an inspiration, a practical dreamer, as he later proved in his works in the photographic continuity of lighting in “The Covered Wagon”; that most admirable Tennessee mountain story, “Stark Love”—an intelligent cameraman. Pleasant memories come to me as I recall our working together. His constructive mind helped me greatly in securing effects photographic in “Intolerance.”

There was one and one-quarter million (1,250,000) feet of lumber used in “Intolerance.” The carpenters received two and two and one-half dollars a day, worked each day until finished—no overtime. Extras received five dollars a day and, as I said before, no electricians were ever used. We called the picture “THE SUN PLAY OF THE AGES.”

(Turn to Page 27)



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ONE HUNDRED PERCENT ARC LAMPS

(Continued from Page 14)

in some cases. The only difficult interference credited to arcs was caused by the public address system.

The entire Technicolor portion of the "House of Rothschild" was taken with arc lamps and the sound and pictures were made together. A viewing of this picture will satisfy any skeptic that arc lamps, even in their present condition, can be successfully used with sound..

The preparation work necessary on the "House of Rothschild" can be greatly reduced by the expenditure of a reasonable amount of money to modernize existing arc lamp equipment. When this work has once been done it will pay for itself many times over by the saving in time on the set.

Considerable work has been done in the past few years by the studio electrical departments to quiet arc lamps. The electrolytic condenser and the choke coil for the elimination of commutator ripple were developed in the studios. Some of the spotlamps and sun arcs are already equipped with cutout motors. It is quite possible with the aid of fibre gears, graphite brushes and built-in choke coils, to make these lamps meet any requirement of the sound department

Due to the recent demand for arc lamps, manufacturers have produced improved arc lamps and carbons. The new type broadsides and scoops used in the "House of Rothschild" and "Kid Millions" delivered 210 foot candles at 15 feet as against 55 foot candles with the old type equipment. They are silent and one operator can handle a large number of them. On a recent picture, "Nana," Gregg Toland used a new model carbon arc spotlamp within two feet of the microphone.

[If the new photographic technique calls for mixed lighting, or even for 100% arc lights, the electrical department is prepared to supply the equipment.]

PAUL PERRY LEAVES US

Mrs. Paul Perry, wife of one of the pioneer cameramen aces of the motion picture industry of America, and for years operating in Hollywood, a brother of Harry Perry and popular among his fellows, departed September 11, for San Francisco whence she will sail for Manila. She goes to join her husband in Manila, where he

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Hollywood, California

has opened a color laboratory for the processing of film shot in the Oriental countries.

Paul Perry is by no means a stranger in the Orient, where he has been on location many times for Hollywood studios, shooting stuff from India to China and Japan.

Paul, here's good luck to you and your new venture. We shall miss you here at the old homestead.

BAUSCH & LOMB FOLDER

A new six-page folder on Bausch & Lomb Tessar Lenses has just been issued at Rochester. This folder is illustrated with examples of photography from this series of lenses and carries schematic drawings showing the arrangement of the elements in the barrel.

A series of magazine advertisements is being released on these lenses.

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A FEW WORDS ABOUT SUN SHADES AND FILTERS

(Continued from Page 19)

gelatine type filters. I still stick to my guns, or rather statements, for a little reflection will show how true it is that the Canada balsam with which these filters are cemented easily becomes soft and "goosey" in heat. It is likewise easily understandable that the thin gelatine from which filters are made easily wrinkles, cracks, crumbles, and what-not. Even the colors are not stable, some of them fading or changing color gradually! However, I have no quarrel with gelatine filters. I again only state my preference—take it or leave it.

The solid glass filter, of which type more and more are being made and used right along, is a most practical affair. The good ones—for which you may have to pay quite a bit—are of excellent optical glass in which the color is inherent. The two surfaces are plane-parallel finished and ground true, hence the minimum of resistance is offered light-rays as they pass through them.

The use of filters, or at least the use of a variety of filters, is in my humble opinion greatly over-estimated. I own over a dozen different kinds, yet actually I find use for not more than three for a wide variety of activities. The beginner is likely to sell himself on the idea that a whole battery of filters is necessary before good work can be produced. I believe in simplicity of equipment, for it is remarkable what can be done with limited equipment if it is used properly. A great many gadgets which are on the market today may be desirable, but not necessarily vital. Remember, it is not the equipment you own, it's how you use it that counts.

The most useful filter for all general purposes is, of course, a pale or medium density yellow filter. It produces excellent results on either orthochromatic or panchromatic film, and brings in cloud effects as good as anyone could desire. It is the first filter the beginner should consider.

As a substitute, a new pale-green filter, known as the panortho (Goerz) has during the past few years become popular. As far as its characteristics go, it approximates the yellow filter.

Another type which has made a big hit is the U. V., or ultra-violet protection filter. This one is almost clear glass, but if you look real close you can detect the slightest trace of a greenish hue in it. It is much like the esculin filter. It differs from the yellow filter in that it retards only ultra-violet light. The yellow, as you know, holds back not only ultra-violet, but blue as well. The U. V. is very good for clouds on both

orthochromatic or panchromatic film, and a real feature of it is that it does not require prolongation of exposure.

This may sound rather off-balance, but let us investigate the matter. There are various makes of U. V. filters. Some require an increase in exposure, while others do not. The Rhaco U. V. filter, for example, is made, not with pigment dye as are most filters, but with a certain chemical compound which must be very accurately made. And because the color is due to a chemical and not a dye, the light is not retarded to any appreciable degree. Of course it is wrong to say that a filter requires no increase in exposure when used—even a plain piece of glass placed before the camera lens will absorb a certain amount of light—but because the retardation factor is so slight that it would be unnoticed, it can be said, within the limits of truth, that it requires no increase in exposure. Thus the U. V. filter can be placed before the lens without a thought of increasing the exposure.

Of course these filters so far mentioned will not produce the effects many amateurs desire, hence additional filters must be brought—into the picture. There seems to be a mania among miniature camera devotees to produce "night effects," almost black skies, etc. For this—if you are interested—a light red filter like the A or F is required. I don't as a general thing, go in for black skies, but once in a while I like a somewhat darker sky than the yellow series gives me. In such cases I like the 23-A, which is even lighter than the A, but still gives pronounced cloud effects and darkens the sky appreciably.

If more exaggerated effects are wanted, special filters such as Scheibe offers should be used. He will make up the most amazing combinations on order—if he hasn't what you want in stock. From here on I must leave you to your own devices, for the more common and popular filters are all I really have occasion to use—and I prefer to adhere to them.

As a final word, the filter, like the lens, should be carefully protected and kept spotlessly clean. My filters for the Leica are unmounted 32 mm. discs, which are used in the H. C. E. combination sunshade and filter holder. Each one is wrapped in lens-tissue and stacked in a small tin can. These same filters fit the Rhaco combination for the Leica, too. I find it an ideal way of keeping and using filters. You may prefer yours mounted in metal slip-on mounts. For cleaning and



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wiping filters, Japanese lens cleaning tissue can't be beaten. It is obtainable in most photographic and optical good stores, and is extremely inexpensive.

All in all, then, it would appear the logical thing to own a good sunshade and a few good filters. If you don't as yet own such equipment, I'd suggest you start saving at once, for new avenues will open to your camera. You will secure more brilliant and snappy negatives from the sunshade, and more pleasing results in general from the filters.

"INTOLERANCE"—THE SUN PLAY OF THE AGES

(Continued from Page 24)

A \$15,000,000 Picture

I have calculated roughly, that at the present scale of wages this picture would have cost over fifteen million dollars (\$15,000,000). We were assisted by some of the best scientists in the world. Also in this picture made way back there you see flame throwing machines, poison gas, etc. You won't believe this, but it's there and, too, molten lead was used. Some of the moving fighting towers were as tall as the walls and were pushed toward the walls by elephants.

There were seven hundred and fifty (750) horses used; sixty (60) of the persons used became great; sixteen (16) became stars—and some who had the leading parts were never heard of in a big way again.

Costumes

In the four stories—The Babylon of Belshazzar; The France of Catherine de Medici (French Huguenot period); The Jerusalem of Christ, and America before the World War, there were more than one thousand different kinds of costumes used.

When the fire throwing scenes were in full blast (fire being thrown from the moving fighting towers and from the walls) the neighbors living in little bungalows on streets adjoining the sets summoned the fire department and the big red ladder trucks and apparatus rushed past the gate guards into the scene upon which there were thousands of extras in action and spoiled nine or ten feet of film.

No Casualties

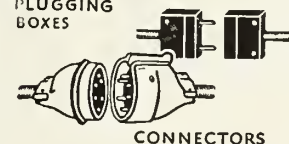
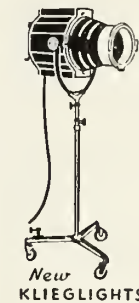
Remember we had only one camera running. Maybe Karl was grinding, too. I don't recall, despite the fact that one saw apparently hundreds of soldiers falling from one hundred and forty foot walls. In the closer views we used professional jumpers and nets. There were no casualties. We had an ambulance and corps of doctors and nurses, but only minor cuts and headaches happened. "Intolerance" had in it the whole of civilized history combined.

"CRIME WITHOUT PASSION"

Audio Productions, Inc., recently completed some very unusual trick photography for Ben Hecht-Charles MacArthur's Paramount feature entitled "Crime Without Passion," which was produced at the Eastern Service Studios. They are now busily engaged on the new Martin Johnson picture.

The trick photography for "Crime Without Passion" was especially designed and devised by Mr. Borkopitch, noted authority on this subject in Hollywood, and the work was carried out under the general supervision of Leo Lipp.

Klieg LIGHTS and wiring devices



THE new Klieglights with their exceptionally high efficiency and extraordinary beam and intensity controls—permitting all kinds of trick lighting at no extra cost—are but one of the many new types of lighting units that can be furnished for motion picture and still photography. We also offer several improved designs in flood-lights, spotlights, overhead lights, side lights, etc., for different purposes and perfected to best meet your needs. In addition, various forms of wiring devices—portable plugging boxes, pin-plug connectors, floor pockets, wall pockets, etc.—and special apparatus made to order.

New BULLETIN No. 106

Now ready for distribution—describes and pictures these various studio lighting units. You will find it helpful. Write for a copy.

KLIEGL BROS

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

321 WEST 50th STREET

NEW YORK, N. Y.

Audio Productions has been expanding its organization for this type of work and is believed to be the foremost company handling trick photography in the East.

Lee Garms was cameraman and co-director of this picture. Joe Kain was sound technician and Art Rosson, production manager.

LONG SHOT BY BOB TOBEY

Recently I caught a preview of "What, No Men?" starring El Brendel and done in two reels and three colors. The color rendition was excellent, the process used being the same Technicolor three-image process that has been so well received in Walt Disney's Silly Symphonies.

This is the first musical I have seen turned out by Ralph Staub under his new contract with Warner Brothers, and I was very favorably impressed. In the cast with El Brendel are Wini Shaw, Phil Regan, and Rosalie Roy. Photography was by that Technicolor veteran, Ray Rennahan.

Staub tells me that he has a big year ahead, with almost a hundred short subjects to produce; fifteen of these are musicals, and nine are in color.

MAX FACTOR'S

Satin Smooth MAKE-UP



Easy to Apply - - - - - Easy to Remove

Stays on All Day - - - Photographically Correct

MAX FACTOR'S MAKE-UP STUDIO • HOLLYWOOD

IMPRESSIONS OF THE NEW AKERS 35mm.

(Continued from Page 16)

trees and dodging cactus, etc., which beset the path, and once ensconced on my tiny ledge from which I was shooting a power line was dropped over the cliff to me from the sound truck and I was ready to "turn 'em over." The final results were some excellent close-ups of the stampeding cattle in the water and rope stunt shots which added tremendously to the dramatic value of the picture. Every shot made with the little camera was used in the finished picture and when screened simultaneously with the shots by the big cameras there was not the slightest distinguishable difference even though the camera had been held in the hand for every shot made.

On another production I used the same camera on the small tripod that is especially made for it by the Akers Company, and found it almost as versatile on the tripod as off. Incidentally, this ingeniously designed tripod, while fully freehead with all the modern refinements, only weighs fifteen pounds and yet it is strong enough to be used with a full sized camera if need be and is noticeably steady and vibrationless.

Because of its instant interchangeability from a hand camera to a tripod held camera, I should think that it will be found especially valuable to newsreel men, explorers, naturalists, etc., where the weight of the combined outfit is an important item.

To get back to technical details, I stated that the camera carries three lenses on a rotary turret. These lenses are mounted in the popular Leica (noncollapsible) micrometer focusing mounts and the camera is standardly equipped with lenses manufactured by the Hugo Meyer Company. The camera I was using carried the Meyer Plasmats working at f.2.7 and I found the screen result to be exceptionally pleasing with just a hint of the pseudo-sterio effect which is noticeable in these lenses. Fast glass may be obtained in these lenses working up to the speed of f.1.5 which, in combination with the 180 degree shutter obtainable in this camera, gives one all the speed of light required in almost any imaginable photographic circumstance.

The regular focal lengths of 40 millimeter, 55 mm. and 75 mm. are used and telephoto lenses are easily provided for. Furthermore, if desired, the wide angle lenses of short focal length, *i. e.*, 35 mm. and 25 mm., are adaptable when arrangements are made for factory installation.

Being equipped with the Leica lens mounts, the filters and effects are carried in the standard Leica filter holder and sunshade, in fact almost all the Leica "gadgets" are applicable to this camera and may be attached as desired.

An optical focusing device is provided in two styles, embodying two distinctly different principles and either is obtainable at the option of the user. One device focuses through the film and presents the image to the eye magnified about four times and corrected as to left to right and uprightness of image.

The other device drops in front of the film and transmits the image in its full brilliance through a series of cleverly designed prisms and is viewed in the same magnifications and correctness as the image obtained through the other device.

The finder is of the conventional direct type and attaches to the side of the camera in the same manner of all finders and is provided with parrallax correction in the ordinary way.

The film rollers and their roller guides are of conventional design. However, the method of loading is rather new and is decidedly foolproof inasmuch as only one set of rollers move out to allow loading. There is no other way to thread the film except the right way.

The roller guides are moved by a small knurled knob which actuates a positive cam thereby locking the film on the rollers when once threaded; this prevents any possibility of mechanical jamming. The rear gate is operated in much the same manner and is positively locked when threaded ready for use. There are no springs or spring pressure plates riding against the film to cause possibility of scratching. The possibility of emulsion adherence with its resultant "snowballing" action is prevented by the aperture gate which is of the finest quality tool steel milled, ground and polished, then heavily chromium plated and buffed to a mirror finish.

An interesting phase of the design is the fact that all moving parts which require lubrication are kept out of the chamber in which the film is exposed, thereby precluding all possibility of oil ever getting on the film from an over-indulgence in lubrication on the part of the operator.

While on the matter of lubrication the bearings are of a rather new type from a metallurgical standpoint. They are composed of material which contains a heavy amount of impregnated oil and graphite and the camera could (with the exception of the movement) be run in its regular course of production for about six months without lubrication attention. The movement, however, being of extreme precision, must receive the same careful attention that any precision movement requires to insure its perfect operation. Easy accessibility for oiling and care is made through designed soundproof apertures for this purpose. In fact the whole works can be taken from the case, inspected, checked completely and replaced ready for action within two hours' time. Registration pins can be removed without taking the mechanism from the case, checked, cleaned, and replaced within a few moments. This feature is especially desirable when the camera is being used for background purposes and where the pins and registration must be absolutely perfect to insure steadiness.

The magazines are of a very simple design utilizing the principle of compensation in the film roll to conserve size and weight. In this respect they somewhat resemble the magazines used in the famous Akeley and like the Akeley they also are of two hundred foot capacity. They are firmly attached and detached by means of a conventional long screw and knurled knob arrangement, such as is employed on almost all exterior magazines. The magazines are made of aluminum but are covered on the outside with rubber of a very durable quality and on the inside they are lined with a thin layer of insulating cork and velvet although the Akers Company have a new interior magazine lining which will prove popular I am sure. It is a black cellulose composition that has the finished surface of glass, the advantage of which is its lack of side friction on the rotating film roll and also its extreme ease in cleaning as a damp cloth quickly removes any possible dust or dirt that may have accumulated in the magazine. The magazine light traps are of the roller type but when the magazine is attached to the camera there are little pressure buttons that lift all pressure of the rollers from the film and allow it to run through an unrestricted trap. This eliminates further the possibility of scratching from dirt in the traps. The full weight of a magazine without film is about two pounds.

A tiny, though accurate, Veeder type film meter is entirely enclosed within the case and the numbers are easily read through a small window. A reset knob on the outside of the case provides for resetting the numbers whenever desired. For special purposes an exterior counter that measures every frame can be installed if the operator wishes.

The small "wild" (not synchronous) motor with which the camera comes equipped can be powered from

either an ordinary house electric line or in the case of distant locations power is derived from three small "B" batteries. It is possible to run it on either direct or alternating 110-volt current. The motor weighs only two and three-quarter pounds but furnishes an abundance of power and is very steady in its operation. Speed control from eight frames per second to thirty frames per second is obtained from a calibrated rheostat with which the camera comes equipped.

In the case of difficult location work and power is being used from battery source it will be found convenient to sling the small "B" batteries in a light fiber case from shoulder straps, their weight of about seven or eight pounds is then practically unnoticeable. Slinging the complete camera from another shoulder strap divides the total weight of about twenty-five pounds into an evenly distributed load, leaving both hands free for progress through the woods or jungle as the case might be, yet at a moment's notice the operator has instant

accessibility and the flexibility desired. When it is wondered why batteries and electric motor are provided instead of a spring motor it must be remembered that with the electric motor one is not limited to the short length of scene that is the known limitation of the spring motor type of camera. It is always when the most interesting part of the desired action is taking place that the spring motor camera takes it into its head to run down and stop, leaving the photographer with that all gone feeling that comes over him when he realizes the good shot he missed. With the electric motor he has not only the full two hundred foot roll to depend upon while shooting but he is also assured of complete steadiness of operation from the first foot to the last.

The ease of holding the camera as a hand camera is something that has to be experienced to be appreciated. The entire weight of the camera while in shooting position is carried upon the shoulder where it is least no-

(Concluded on Page 31)

Fred Westerberg, author of that most helpful little book, "The Cinematographer's Book of Tables", announces that in November he will begin another series of tables to run indefinitely in The International Photographer.

The title of the table for November is "CAMERA SPEEDS," and the table will be so printed in the magazine as to be easily removed for filing in your little red book, "The Cinematographer's Book of Tables"—if you have one. If you have not a copy you'd better call on your dealer right away so that you may not fail to have one in your pocket when you need it.

This wonderful little book has become over night a necessity to the cameraman and is as much a part of his equipment as the camera itself. It is an amazing time saver.

And it's just as valuable for the 16mm. cameraman as it is for the professional.

IT COSTS ONLY \$1.00 A COPY.

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Hollywood



Ballet Russe "Union Pacific". Actual performance photo by Lester-Pickett, LEICA SUMMAR f:2, 1/40th sec.

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BELL & HOWELL Professional Motion Picture Camera complete with 35—40—50—75 mm. lenses and Mitchell tripod legs. Also Akeley Camera complete with 2 in., 6 in., 17 in. lenses. Mervyn Freeman, 1960 South Vermont Ave., Los Angeles, Calif. Phone: REpublic 3171.

LIKE NEW SOUND MOVIOLA, Model UC, Price \$450; also new H. C. E. Freehead Tripod and legs for Bell & Howell, Eyemo or DeVry cameras—\$75 complete. Hollywood Camera Exchange, 1600 North Cahuenga Blvd., Hollywood.

FOR SALE—CAMERAS AND EQUIPMENT

NEW AND USED HOME MOVIE CAMERAS—DeVry Motion Picture Cameras—sound on film portable projectors with operators for rent. Photographic supplies—fine grain finishing—courteous service. Educational Project-O Film Co., 1611 North Cahuenga, Hollywood.

REAL BARGAINS in 16 and 35 mm. movie equipment and still cameras. Newest types cameras and projectors in all popular makes. Save money on film, lights, lenses and all essential accessories. Our 36 years of experience stands back of every sale. Before you buy, send for our new bargain booklet. Burke & James, Inc., 223 W. Madison St., Chicago.

MITCHELL—Late model silenced camera, fully equipped. Reasonable. Continental Filmcraft, Inc., 1611 Cosmo Street, Hollywood.

CAMERA REPAIRING

BELL & HOWELL cameras with old type shuttles silenced, \$150. Hollywood Motion Picture Equipment Co., 645 No. Martel Ave., Hollywood.

FOR SALE OR RENT—MISCELLANEOUS

FOR SALE—Bell & Howell 1000 ft. Magazines. Good as new, priced right for quick sale. Box 99, International Photographer, Hollywood.

FOR SALE—Mitchell Camera in A1 condition. Astro Lenses, Slip Head Tripod, Upright Finder, Silenced. Box 90, International Photographer, Hollywood.

FOR SALE—Mitchell Tripod Friction Head in new condition. Box 95, International Photographer, Hollywood.

FOR SALE—Inspected and Guaranteed Negative Short Ends—All Kinds. Continental Filmcraft Inc., 1611 Cosmo Street, Hollywood, Calif.

MITCHELL MOTOR—1000 ft. Mitchell magazines. J. R. Lockwood, Glendale. Douglas 3361-W.

FOR SALE—75 mm. Cooke Lens. F.2 in Mitchell mount complete. 50 and 75 mm. Astro lenses, mounted and unmounted. J. R. Lockwood, 523 North Orange Street, Glendale. Douglas 3361-W.

BUYERS READ these classified advertisements as you are now doing. If you have something for sale or exchange—advertise it in these columns. **THE INTERNATIONAL PHOTOGRAPHER**, 1605 No. Cahuenga Ave., Hollywood.

FOR RENT—25 and 35 mm. lenses, motor adapters, Mitchell Standard tripod head, baby tripod, 400 ft. Mitchell magazines. J. R. Lockwood, 523 North Orange St., Glendale, Douglas 3361-W.

FOR RENT—CAMERAS

TWO THOROUGHLY silenced Mitchell cameras. Follow focus device, Pan Astro lenses, Freehead—1000 ft. magazines. J. R. Lockwood, 523 No. Orange St., Glendale. Douglas 3361-W.

THE INTERNATIONAL PROJECTIONIST

THE INTERNATIONAL PROJECTIONIST, a monthly magazine published in the interests of the projectionist. Interesting, instructive. Yearly subscription U. S. and possessions, \$2; foreign countries, \$2.50. James T. Finn Publishing Corp., 1 West 47th St., New York.

WANTED TO BUY

WANTED—Motion Picture and Still Cameras, all types, Lenses, Finders, Tripod Heads, Leica or Contax Cameras. Cash for bargains. Camera Supply Company, 1515 No. Cahuenga Blvd., Hollywood.

WANTED—Two Bell & Howell 120° or 170° shutter cameras immediately, for cash. Continental Filmcraft, Inc., 1611 Cosmo Street, Hollywood.

WANTED—NEW OR USED 35mm. SOUND ON FILM RECORDING EQUIPMENT, SINGLE OR DOUBLE SYSTEM. GIVE ALL PARTICULARS IN FIRST LETTER. BIRD FILMS LIMITED, REGINA, SASKATCHEWAN, CANADA.

WANTED—New or used 35mm. sound on film recording equipment, single or double system. Give all particulars in first letter. BIRD FILMS LIMITED, Regina, Saskatchewan, Canada.

POSITION WANTED

DO YOU WANT A CAMERAMAN who is an expert on studio production; or an expedition cameraman who knows every corner of the world; or a cameraman who thoroughly understands the making of industrial pictures; or an expert newsreel photographer; or an expert color cameraman? A limited number of cameramen, backed by years of experience, are available. Write stating your requirements and we shall be glad to assist you in choosing the kind of cameraman you want. **INTERNATIONAL PHOTOGRAPHER**, 1605 North Cahuenga Ave., Hollywood.



MISCELLANEOUS

COMPLETE COURSE IN FLYING—If interested in aviation, see Roy Klaffki, 1605 North Cahuenga Ave., Hollywood.

WANTED—To know of the whereabouts of motion picture relics, documents, or equipment of a historical nature for Museum purposes. Write Earl Theisen, care of International Photographer, 1605 Cahuenga Ave., Hollywood.

DEVELOPING IN DAYLIGHT!

*The Optochrom Developing Tank a Miracle
Photographic Process*

As per circular received, this is the greatest step forward in this important photographic process made in years. It seems almost unbelievable that it has actually been accomplished and we were also somewhat dubious, until Dr. Brooks on his recent visit to Germany personally investigated this item and talked with a number of dealers who had been selling it with success and enthusiasm for some time.

The factory is forced to work day and night in three shifts to keep up with the demand. While it has been on the German market for nearly one year, we preferred not to announce it until deliveries were actually in sight, which is now the case. It is made as yet only for the 2¼x3¼" and 2¼x2¼" roll film, which news will be of particular interest to the many Rolleiflex devotees. Other sizes will be announced later.

As indicated in the circular, its use is comparatively simple. One takes the roll film just as it comes from the camera, inserts it in the inner part of the tank in very much the same manner as it is inserted in the camera, unrolling about five inches of the cover paper. This inner part is then loaded in the tank proper with the cover paper extending out through a slot in one side of the tank. The cover of the tank is then put in place, and one simply pulls the end of the cover paper, until it is completely out of the tank. The slot in the side of the tank is then closed by means of a simple seal. The processing of the film is now begun by pouring the developer through the funnel-like opening in the top of the tank. A rubber hose may be attached to the top and the film can be efficiently washed in the same tank. Rinsing and fixing are proceeded in the same manner.

The secret of this remarkable tank is that when the cover paper is pulled through, the loading end of the film, which is not fastened to the cover paper, is cleverly separated by a metal device and forced through a spiral groove in the inner part of the tank which keeps it well separated and allows a good circulation of the solution. When the end of the film is reached, which is fastened to the cover paper, it is cut loose by the ingenious metal device which is mentioned above, and the cover paper may then be removed entirely.

The tank is constructed of Thesite, a form of bakelite, beautifully molded and impervious to the various chemicals used in photography.

Write Burleigh Brooks, 127 West 42nd Street, New York City, for illustrated circulars, and arrange for a free trial.

IMPRESSIONS OF NEW AKERS 35mm.

(Continued from Page 29)

ticed. The magazine which is resting on the shoulder fits snug alongside the right side of the operator's head and the finder is then directly in position in front of the eye. Even if one is wearing glasses or goggles (as in air work) it will be found that the vision is not crowded in any respect. One hand holds the camera in perfect security and control, leaving the other free for any other purpose, such as supporting the operator himself while in difficult positions. The fact of the magazine resting against the side of the head assures one of ease of finder alignment inasmuch as the head is the most stable part of the body and any difference in vertical picture alignment is almost automatically corrected for this reason.

This about summarizes all of the technical detail that I think would be interesting at the present writing and I hope that I have satisfied to some degree any questions of a major feature regarding this camera.

While I have stated that this is a new camera it is new to the trade but it has been under steady use and trial here in Hollywood for almost two years before being offered to the world at large and it has been enthusiastically approved by all the leading cameramen and directors who have seen and used it and I am sure that the industry will welcome this camera as a permanent addition to its equipment.

Also I feel safe in predicting that the Akers Camera will prove to be as popular a general utility camera now in the present era of sound as were the old reliable Universal camera and the famous Akeley during the time of the silent pictures. I know that I was well satisfied with its general performance and I hope that whenever you get the chance to get your hands on one you will have as much fun in shooting it as I have had.

A NEW MINIATURE PROJECTOR ANNOUNCED

As an addition to the famous series of Udimo projectors, E. Leitz, Inc., 60 East 10th Street, New York City, is announcing the new miniature projector known as the UMINO. The small projector is unique in that it accommodates not only film slides (both single frame $\frac{3}{4} \times 1$ inch and double frame $1 \times 1\frac{1}{2}$ inch), but also 2×2 inch glass slides. The versatility is not approached by any other projector of this type and size.

The miniature projector measures $2\frac{1}{2} \times 5 \times 7$ inches, and weighs only $2\frac{1}{2}$ pounds. A highly-corrected projection lens is supplied in focusing mount, and the illumination is supplied by either 50 or 100 watt, 110 volt lamp. For special requirements, an adapter may be installed whereby the illumination is furnished by a standard automobile storage battery, using a low-voltage lamp. This new projector is manufactured in the United States.

Made of light-weight, but sturdy metal throughout, this new projector will appeal not only to salesmen, educators, lecturers, and demonstrators, but also to amateur photographers. A still picture projector in the home is an increasingly popular fad, and is rapidly taking its place along side of the home movie projector as a means for amusement and instruction.

Why not see the new Leica miniature projector at your local dealer's? The price of \$45.00 is extremely low, especially when the compactness, design, construction, and versatility are considered. If your local dealer cannot show you this new equipment, write to E. Leitz, Inc., for complete information.

Scheibe's FILTERS
 In World-Wide Use
 produce Moonlight and Night Effects in Daytime-Fog Scenes-Diffused Focus, and many other effects With any Camera - In any Climate
George H. Scheibe
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400 watt Biplane Mazda light is equal to 500 watt. Kodacolor may be used. Instrument complete with cord and plug—instructions—carrying case. Fully guaranteed for one year. Regular \$150.00; Bass price \$99.50.

Full details and Bass Bargaining No. 212 is free on request.

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 "I personally guarantee satisfaction or your money back. I guarantee the 400 watt Biplane Filament Mazda equal to 500 watt in illumination."
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TREATISE ON ASTRONOMY AND THE TELESCOPE FREE

A nine page booklet prepared by E. S. Bissell, titled "Teaching With the Telescope," is being offered without cost by Bausch & Lomb to those interested in astronomy and the telescope.

Although written for the use of science teachers, the booklet deals with the subject in simple language and is easily understood by the amateur astronomer or telescopicist.

Since even the larger observatories cannot watch all of the sky at the same time, observations and reports from amateurs on novae, comets, meteors and variables receive serious attention when forwarded to the nearest observatory.

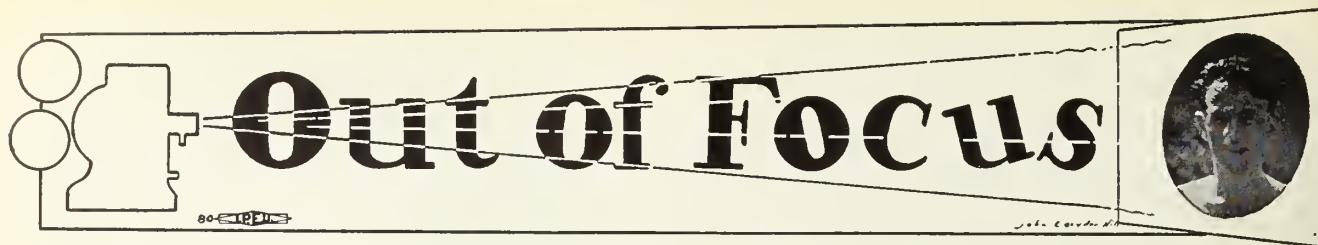
The booklet discusses briefly Planets, Sun Spots, Double Stars, Star Clusters, Nebulae and Lunar Topography, and suggests the method and the equipment for their study. Bausch & Lomb Optical Co., Rochester, N. Y.

BELL & HOWELL ACTIVITIES

The Bell & Howell Filmosound Rental Library announces the establishment of the following branch libraries: Auditorium Supply Co., Minneapolis; Burgert Bros., Tampa; Photoart House, Milwaukee. This library specializes in rentals of high grade 16 mm. sound on film subjects and now has over twenty branches in various cities of the country.

Bell & Howell have received the following radiogram from Little America from Commander Noville of the Byrd Antarctic Expedition:

"The Eyemo and two Filmo Cameras are functioning as perfectly at 70 below as they did in tropics STOP have excellent pictures for you. Regards. Commander Noville."



By Otto Phocus

SENSE OR CENSOR?



We present this issue a near likeness of Mr. McWilliam Fitzwhistle, President of the Sons and Daughters of the Society for the Presentation of Clean, Immaculate, Unpolluted, Unadulterated, Spotless Pictures for Twenty-five Cents.

Heil! Mr. Fitzwhistle

At last the cameramen have a champion. For years they had been working silently to get clean pictures, but it had been an "up stairs" battle. Since the advent of sound pictures, more has been heard, but it is still an "up stairs" battle because most of the offices are on the second floor.

Every precaution known has been used to keep pictures clean from the cameramen's angle, and we welcome Mr. Fitzwhistle, like a 1:00 P. M. call, after working all night.

It might interest Mr. Fitzwhistle to know that a speck of dust is as welcome in the manufacturing of film as a buckle when photographing a train wreck. That the film is wrapped in cellophane, sealed in tin cans, packed in cartons and handled with care until it is delivered at the dark room door. In fact it is a shame to have to open it and expose it to the world, the way things are these days.

Magazines have been known to be cleaned up by the assistant cameramen and aperture plates have been polished so much that they have been worn thin and had to be resurfaced again to get proper registration.

In the laboratories they start the day by cleaning the air. The water has been purified, pasteurized and sterilized. The chemicals are so pure it seems a shame to have to mix them. Men with flashlights go around looking for dirt and inspectors with large ears go around listening for it.

At certain studios they change the administration regularly and as soon as the new administrators arrive on the scene they proceed to clean out all the heads of departments. As soon as the new heads of the departments arrive they continue the cleaning process.

Most of the camera departments have little rooms nearby where the cameramen can be cleaned. Especially on pay days. At some of the larger studios they list the units working on blackboards; the blackboards have been almost clean for some time.

In handling the film, the workers wear white gloves and in most of the scenario departments they have been cleaned out of ideas for some time.

This is the situation, Mr. Fitzwhistle, and any suggestions you can give us will be appreciated provided they are sent prepaid and in addition, we have no appropriation to pay salaries for additional help at the present time.

So-o-o our hands are clean and most of our thoughts, except when we read the demand for "cleaner" pictures when we are doing everything possible to make them clean.

Hell! Mr. Fitzwhistle.

JUDGE PRIEST

Irvin S. Cobb's stories of Judge Priest are woven into a story that will entertain and enthuse from start to finish. The locale is the good old south after the Civil War and Will Rogers is so superlatively Judge Priest that one forgets he is Will Rogers. And that's saying a lot. Henry

N. Walthall shows fine restraint in the part of Rev. Ashby Brand, while Stepin Fetchit provides much of the humor. It's one of those stories which prove that a picture which will pass the censors a hundred percent can be even more entertaining than the other kind. It is a Fox masterpiece.

THESE PHOTOGRAPHS REFLECT OUR INTEREST IN LIGHT CONTROL



1. A polished metal or mirrored glass surface gives accurate light control

ALTHOUGH an incandescent lamp can be used bare for photography, its light is made infinitely more effective by properly designed reflectors.

As these photographs suggest, the nature of reflecting surfaces plays an important part in determining the light control provided by reflectors. Notice what happens, as illustrated in photograph No. 1, when light strikes a polished metal or mirrored glass reflector. Such a surface provides most accurate control of light as it reflects the light in a definite direction. On the other hand, a surface that is practically matte, such as porcelain enamel, as photograph No. 2 shows, diffuses the light in all directions and permits little control. While, as photograph No. 3 shows, a semi-matte surface, such as treated aluminum, gives a spread of light, in a definite direction with controlled diffusion.

These facts about light control, fundamental in illumination and in cinematography, have been keenly studied by General Electric's engineers and scientists. Along with a basic knowledge of how to produce the lighting effects cinematographers use so successfully, these facts aid in developing new Edison MAZDA lamps to meet motion picture requirements. They also guide us in improving existing types of Edison MAZDA lamps and in helping you obtain full effectiveness from these lamps.

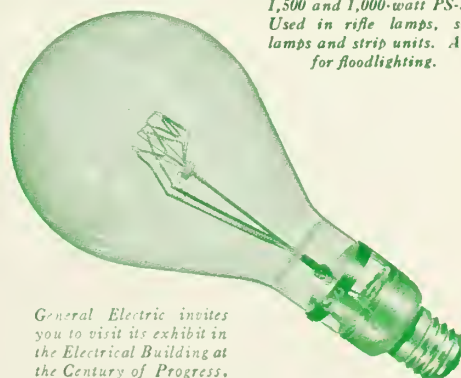
Coupled with the hundreds of tests, checks and inspections which Edison MAZDA lamps undergo, this study provides another reason why studios from coast to coast use Edison MAZDA lamps for every lighting need—from set lighting to process work. General Electric Company, Nela Park, Cleveland, Ohio.



2. A matte surface permits little light control



3. A semi-matte surface gives controlled diffusion, plus direction



1,500 and 1,000-watt PS-52.
Used in rifle lamps, side
lamps and strip units. Also
for floodlighting.

EDISON MAZDA LAMPS
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General Electric invites
you to visit its exhibit in
the Electrical Building at
the Century of Progress.

Quiet IN OPERATION



Because it is properly engineered, having less moving parts, less gears, the *Mitchell Sound Camera* meets today's demands for silence, ease of operation, light weight.

MITCHELL CAMERA CORPORATION

665 N. ROBERTSON BOULEVARD
WEST HOLLYWOOD, CALIF.

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Phone OXford 1051

INTERNATIONAL PHOTOGRAPHER

—HOLLYWOOD—

THIRTY-SEVEN
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NOVEMBER, 1934

VOL. 6
No. 10



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SHIRLEY VANCE MARTIN

MOTION PICTURE ARTS AND CRAFTS



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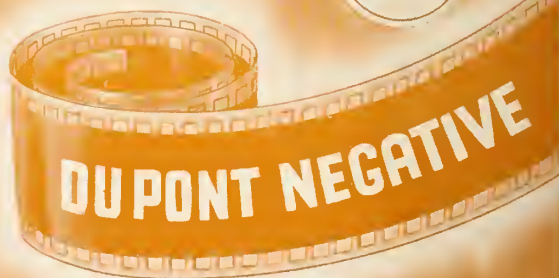
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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

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A Monthly Publication Dedicated to the Advancement of Cinematography in All
Its Branches; Professional and Amateur; Photography; Laboratory and Processing,
Film Editing, Sound Recording, Projection, Pictorialists.

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covering a field that reaches from coast to coast across North America.
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ANNOUNCEMENTS FOR DECEMBER

NINETEEN THIRTY-FIVE

Will be the biggest year in the life
of THE INTERNATIONAL PHOTO-
GRAPHER and people interested in
Motion Picture Arts and Crafts will
get more for their money in subscrib-
ing for it at \$2.00 a year than they
can get anywhere else in America or
Europe.

Features for publication in 1935
will be announced in our magazine
for January.

As a Christmas present it is ideal
and worth many times the small
price of its subscription.

NUMA

Our front cover this month is graced with
the noble lineaments of Numa, internationally
famous lion, recently deceased. This lion, a
product of the great Gay Lion Farm, was
brought under the influence of gentle treat-
ment and Mrs. Gay, who personally looked
after him, said that he and his friend and
playmate, Slats, were the two lions of all
she ever saw that had no hatred in them.
Numa was the best known and beloved of all
lions who worked in the movies. Shirley
Vance Martin, who shot this still and who
photographed Numa many times, said that
this lion was always shot in the open with
no bars between himself and the still man.



Montage

By M. L. TANDON, *Cawnpore, India*

We have great pleasure in printing this article by Mr. Tandon. He has worked in Hollywood. Unlike some other Indians, who just have a pleasure trip round, he hates personal publicity. He is very unassuming in his behavior and very sincere in talk. Of all the "foreign returned" Indians, he has impressed us as the most capable. —Editor of the Motion Picture Monthly, of Bombay, India.

DURING the last few years the word Montage has caused more bewilderment than anything else since the days when Griffith introduced the close-ups. I shall try to explain as clearly and as simply as possible what is Montage.

Montage is a French word meaning to mount or to assemble. It was first used by the Russians and is, in fact, the nerve of the Cinema.

The commonest and the most mis-used definition of Montage is that it is quick cutting and building up on the mounting line of excitement. According to Pudovkin Montage is "the logic," the structural principle of film language—Film-grammar. According to Eisenstein, Montage is the mathematics of film-construction, the dialectical principles governing the dynamics of film-form—Film Dialectic.

I have emphasized again and again that Montage does not mean and is not of necessity intrinsically identified with quick short-cut flashes of scenes pieced together in rapid succession. It is, rather, the *forming principle* that conditions and governs the final unity of the film "investing the whole structure of the picture with the logic of image association that the multiplicity of Montage-devices makes possible."

But how does this work in parts and consequently in whole? Let us take an example.

Dog + Mouth = Bark.

Heart + Dagger = Suicide.

Mouth + Food = Eat.

and so on.

Here two independent shots placed in juxtaposition explode a new concept.

Or to take another example:

1. A person looking at something.
2. A plate of food.
3. The same person holding his stomach.

If these three shots are mounted together, they convey to us some meaning that the person ate the food and it did not agree with him. But these shots if taken isolated do not give us any meaning. This is Montage in its epic principle. But does it work this way in pictures? Only partially, because Montage of a film refers to its whole structure and not to parts only. The complete scenario has to be written with regard to the relation and inter-relation of its parts. In other words, the whole stuff has to be reduced to a symphony, where everything runs in a logical order. Each shot has to fit perfectly into the scene, the scene into sequences, the sequences into episodes, creating a rhythmical unity. Why? Because image, shot and scene is only a word without a meaning. It conveys

some meaning only by a *series* of shots preceding or following. Each sequence has thus a thought combination linked together in bigger sequences expressing ideas.

How to put the shots together and where to emphasize by means of contrast, dissolves, cuts, suggestions, etc., is the task faced by the director. He may start the picture slowly and gradually work up to a bang, e.g., "Heir to Jengiz Khan," "Soil," etc. In a recent Soviet picture, "Shame," the action was gradually built up to such a stupefying climax that the whole screen seemed to shiver, so tremendous was the reaction of the machine being tested.

The talkies have retarded the progress of Montage. It becomes impossible to cut in the middle of a dialogue. Moreover, no sooner the characters start their babel of dialogue the movement is stopped. Specially in our wonderful Indian pictures where songs take precedence over action. Moving camera is another drawback in Montage. Recently I have seen that our directors are very fond of using, rather mis-using, the dolly shots. They forget that no sooner they move the camera, they make us aware of its presence and the whole illusion is gone. No doubt, such a great director as Pabst uses it; but in every one of his films down from the "Joyless Street" to the "Don Quixote," Pabst has never used the moving camera just for sheer pleasure or novelty. He has either used it on movement as in "Der Drei Groschenoeper" or only when it was necessary to bring out the mood of the scene as in "Kamaradschaft."

Ekk has used Montage to a tremendous perfection in that brilliant film, "Road to Life." In one of the sequences he had to show the death of the hero. How did Ekk suggest it? He showed the hero being attacked by his enemy in the dusk. He inter-cut a flash of a knife and cut back to the fighting scene. Here he added a groaning sound to the scene and faded out. We were in suspense and were never to know who of the two has been killed. In the next fade-in Ekk showed a groat of the hero's friend waiting for him to start the locomotive. They wait and wait. Suspense. Finally they themselves drive the locomotive and discover the body of the hero lying on the railroad. They pick him up and place it on the cow-catcher and the locomotive speeds on. Ekk's camera now shoots down on the body. On the other side are the friends and workers waiting for the arrival of the first locomotive in that region. The band is playing and they are rejoicing. Then the locomotive is seen and the band plays faster and louder. As the locomotive draws closer, throwing that sad escaping steam which makes a suppressed sad tone, all of them stop. Slowly they take their hats off one by one. They don't cry or go in hysterics. They solemnly watch the approaching locomotive, and the locomotive does all the sorrowing through its steam. I have written this at length because I believe that the indirect method of suggestion is the most effective in Cinema. The effect of this over-possessing film cannot be felt in describing. It has to be seen. This was Montage in its advanced form.

Of course, there are many kinds of Montage. Timo-

(Reprinted from *The Motion Picture Monthly*, of Bombay, India, leading motion picture periodical of the Orient. It is by far the most learned article on Montage offered east or west, and we are not sorry to go to Mother India for it. If this editor may be permitted a guess in one word as to the real meaning of Montage, he would say that it is the spirit of a picture plus its rhythm.—Editor's Note.)

spenko, one of the professors at Moscow University, has divided Montage into 15 parts.

(1) Change of Place, as in "The Soil is Thirsty," where the scene changes from Amen Derby's garden to the dry land.

(2) Change of camera angle as in the shooting sequence of "Storm Over Asia," wherein Pudovkin shot the action from various angles not for the purpose of pictorial effect but to make sure that the bullet won't miss.

(3) Change of the position of Camera as in most pictures, where a change brings out something hidden that affects the story at the spot, e.g., "Mysterious Lady" and "Diary of a Lost Girl" and "Ghost That Never Returns."

(4) Stressing of details as in "End of St. Petersburg," where a close-up of a boot gives the whole idea in one shot.

(5) Analytical Montage as in "Men and Jobs," when the crane is cut in constantly with the new mechanics and the close-ups of the machine's handles.

(6) Past time as in various films when a cut back to some past event signifies a change in action, e.g., "China Express," where the guns and artillery are superimposed on the capitalist's hands.

(7) Future Time, the prophetic vision of Eisenstein on the Mexico of tomorrow, "Que Viva Mexico."

(8) Parallel events as in "Heir to Gengiz Khan," the preparation of Lamas and the preparation of the white traders.

(9) Contrast as in "Cavalcade," the noisy servants and the dignified family.

(10) Concentration. As in many films starting from a long shot and concentrating on a close up of something.

(11) Association. As in "Jennie Gerhard" or "Storm Over Asia," wherein the sequences are matched in the form and action is similar but opposite in effect in the latter.

(12) Enlargement, e.g., "Blue Angel," starting with a close-up and revealing the whole shot afterwards.

(13) Monodramatic Montage, same action carried through repeatedly, as in "Cavalcade," the repetition of New Year's eve.

(14) Refrain or Leit motif, stressing of certain details at intervals as the bottle in "Dawn on the Horizon."

(15) Montage. General term applied to the cutting of shots and sequences according to the mood and rhythm.

Besides these, there are other types of "Montage," such as used by Pudovkin in "Mother" and "St. Petersburg," known as symbolic intercuts, which have nothing to do with the action of the story, but which are mounted psychologically to convey an impressionistic effect, e.g., famous explosion scene in "St. Petersburg" and the joy of the prisoner in "Mother," or the gradual change of mood through static shots, as in the films of Douzhenko, "Arsenal," "Ivan."

Herr Arnheim does not agree with Pudovkin's symbolic intercuts on the ground that the ideal symbolic connection of smile, brook, sunbeams and the laughing child cannot be given an optical coherence because the unity of the scene is interrupted by something totally different.

But Herr Arnheim forgets that when the audience

sees the brooks, and the laughing child, the audience does not feel that he is seeing the brook and the "laughing child." The audience only sees the "joy," in other words, the essence of the shots, which is the "happiness" felt by the prisoner. Likewise, in "St. Petersburg," the shot of a magnesium were cut into the shot of a river conveyed on the senses, not the water in the river, but the light and shade contrast, which in turn reacted psychologically for the explosion.

Such a scene as described above has to be mounted very perfectly. The director has to know how many frames to a shot should be put. There a frame less or more will unbalance the effect and the impression desired will be lost.

In the massacre sequence in "Potemkin," Eisenstein had to show the death of a young mother in the confusion and tumult of the shooting. Eisenstein took a medium shot of the mother standing against her perambulator trying to shield her baby from the down coming Cossacks. But they shoot her in the stomach. The close-ups of her hands clutching at the abdomen, of her face rolling in agony, of her tottering form, of her sudden fall, and death, and finally as a consequence of her fall the accidental releasing of the brakes on the perambulator, which starts bouncing down the steps, are separated in the Montage—continuity of this sequence by long shots of the Cossacks and by the close-ups of groups and faces in the fleeing masses. The girl is the structural point of the analysis. The intercut images of the masses are the functional point of the entire image analysis. The girl's death movement is not mounted as a constant, unvaried unit, but each cut-back to the girl's sinking body shows another section of the body.

This is also an example of the diversion of movement according to time-cutting in which each cut-back to the girl reveals her nearer to the death, nearer to her sinking completely on the stone steps. The last cut, following flash long shots of the Cossacks, shows her just as she has fallen to the ground. But this is not all. Eisenstein crosscuts the downward movement of the perambulator with the downward march of the Cossacks, giving the sequence a rhythmic flow.

We see from the above example that in Montage not only the image alone, but the combination of them all, governs the Montage of the sequence.

The image-idea underlies the image structure and governs it. It is as much the mathematical resultant of overtone cumulations arising out of the conflict between the single images themselves (which collectively form the image idea) as it is the product of these images in a purely Montage sense.

In the highest type of films, the majority of images operate simultaneously in both a descriptive and a symbolic capacity, e.g., Pudovkin's symbolic intercuts and Eisenstein's famous "Que Viva Mexico," where in the triumph of the revolution is intercut with the birth of a child.

This is the richest, fullest and the most intellectual method of expression now at the disposal of the director.

This article may be meaningless to our Indian Directors, who think of cinema in terms of Songs and Dances. But if the methods enunciated here are used by even one director, I would think myself amply repaid for this short article.

Motion Picture Sound Recording

CHAPTER XIV

By CHARLES FELSTEAD, *Associate Editor*

THE second of this series of chapters on film recording, published last month, completed the description of the constructional detail of the film recording machine employed in the Western Electric sound recording system. That chapter also discussed the constant light source, the two lens systems, and the electromagnet assembly on which the light valve is mounted. The photo-electric cell amplifiers used for PEC monitoring were also described.

In this chapter, the construction of the light valve, which is the light modulating device used in the W. E. film recording system, will be examined in considerable detail; but the theory of the functioning of the light valve will not be discussed until next month in the final chapter on film recording. The related operations of stringing and tuning the light valve will also be described in the present chapter.

Mounting of the Light Valve

The frame of the light valve is formed of a flat slab of metal that just fits across the two end arms of the E-shaped core of the electromagnet. Two screws with knurled knobs hold it firmly and exactly in position when it is placed on the core. This flat slab of metal thus forms the armature of the electromagnet described in the chapter last month; and it is equipped with a central projecting wedge of metal that is identical in size and shape with the wedge-shaped end of the center leg of the electromagnet.

Like the wedge-shaped projection on the electromagnet, this central projecting wedge on the light valve frame has a slot cut through it. On the front face of the wedge-like elevation on the light valve frame, the opening is eight mils wide by 256 mils long, and it expands to an opening 204 mils wide by 256 mils long in the outside face of the armature. This exactly corresponds to the dimensions of the tapered slot in the electromagnet core.

The narrow portions of the two slots face each other when the light valve is mounted in position on the electromagnet. The flaring of the slots is to provide space for the converging and diverging light beam on the two sides of the ribbons of the light valve. The light beam is focused by the condensing lens mounted next to the recording lamp and converges through the wedge-shaped opening in the center leg of the electromagnet onto the ribbons of the light valve. The light beam then passes between the ribbons and is permitted to diverge in the flare of the slot through the wedge-like elevation on the light valve frame. This divergent beam of light is collected by the objective lens system and focused on the moving film in the exposure chamber of the recording machine.

Thus we see that when the light valve is fastened in place on the core of the electromagnet, the wedge-shaped elevation in the center of the frame of the light valve is precisely opposite the similar wedge-shaped end of the center leg of the E-shaped core; and the small openings of both slots are facing each other and are exactly parallel. With the light valve thus in operating position, the two elevations are spaced eight mils apart when there is no current flowing through the winding of the electro-

magnet; but when the electromagnet is energized by a current from the battery, this air gap is reduced to seven mils. This is crudely illustrated in the accompanying diagram.

Construction of the Light Valve

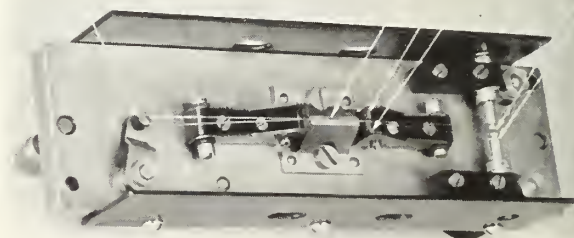
On the face of the light valve frame, which is the side that has the central elevation, there are two screw-like arrangements called *windlasses* mounted near one end. These windlasses are slotted to hold the two ends of a loop of duralumin ribbon; and they fit their mountings tightly enough so that they cannot turn of their own accord and permit the ends of the ribbon to come loose. One windlass is insulated from the light valve frame, but the other one is grounded directly to the frame; and they are connected to the two binding posts on the back of the frame that form the two terminals of the light valve.

The center of the loop of duralumin ribbon is drawn tight by a miniature pulley mounted on an arm at the other end of the light valve frame. This pulley is insulated from the frame; and it is arranged so that a spring makes it keep a constant tension on the loop of ribbon. The strength of the pull of the spring on the ribbon can be regulated by means of a screw that projects through to the back of the light valve frame.

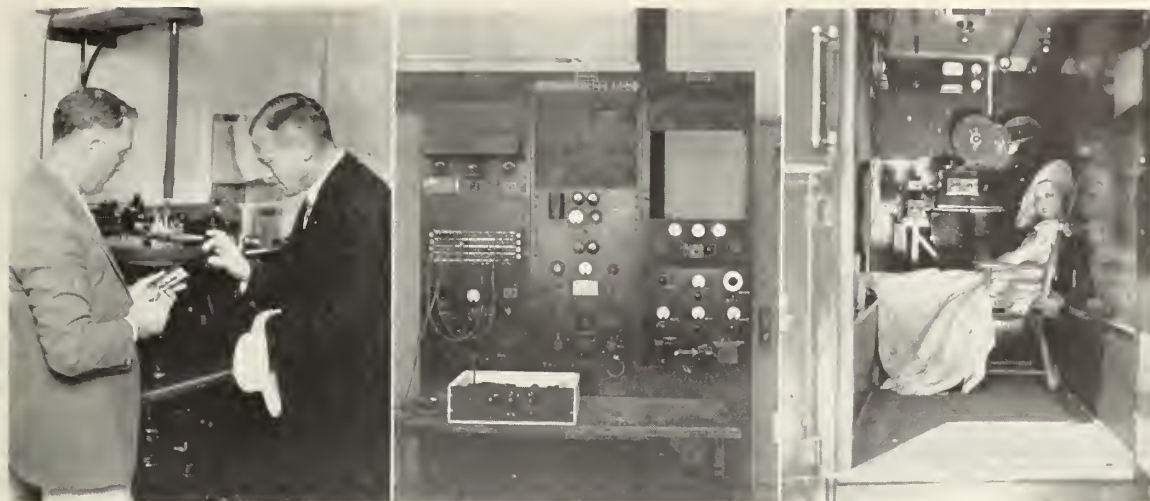
Insulated *bridges* are mounted on each side of the wedge-like central elevation on the face of the frame. The windlasses and the pulley are arranged so that the two sides of the loop of ribbon are supported by the bridges just three mils above the face of the projecting metal wedge. These bridges are comparable to the bridge that supports the strings of a violin, only in the case of the light valve the bridges are smooth on the top instead of notched. The positions of these bridges should be evident from the accompanying photograph.

Position of the Ribbon Loop

Four adjustable insulated pincers confine the two sides of the loop of ribbon to the center portions of the insulating bridges, which serves to place the sides of the loop directly along the longitudinal edges of the slot in the face of the projecting wedge. When the two ribbons are properly centered over the slot and spaced exactly one mil apart (one mil is one-thousandths of an inch) by adjusting the four pincers, they shut off most of the width of the opening; and if the light valve is inter-



Face of the light valve of the Western Electric recording system. A and A' are the windlasses. B is the insulated pulley. C and C' are the pincers; the insulated bridge is just below them. D is the slot in the wedge-shaped elevation through which the beam of light shines. Courtesy Bell Telephone Laboratories. Chapter XIV.



Left—C. Roy Hunter (left), head of the sound department of Universal Studios, explaining to Robert Sibley, U. S. delegate to the World Power Conference, at Berlin, the intricacies of the new sound-on-film device for motion pictures, compared with the old disc method of sound reproduction as seen in the background. This photograph gives an idea of the size and delicateness of the light valve. A wax recording machine is in the background. Courtesy Universal Pictures Corporation. Chapter XIV. Center—The light valve tuning panel on which the natural period of vibration of the ribbons on a light valve is raised to 8500 cycles per second. Courtesy Universal Pictures Corporation. Both Chapters XIV and XV. Right—Mechanical and Ornamental. Jean Arthur, who plays the leading feminine role, enjoys the cool seclusion of the sound truck while on location during the filming of Universal's comedy, "Bad Boy." The film recording machine mounted in a sound truck. Both feed and take-up magazines are at the top. The footage counters and the large PEC amplifier box, just below the exposure chamber, may be located easily. Courtesy Universal Pictures Corporation. Chapter XIV.

posed between the eye and a source of light, the slot appears to be only one mil wide and 256 mils long.

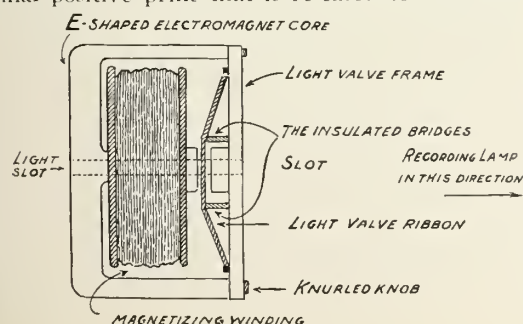
The flat side of the portion of the ribbon that passes over the slot is parallel with the face of the light valve frame; but the remainder of the ribbon that forms the loop around the pulley is turned so that the flat side of the ribbon is perpendicular to the frame. This necessitates a quarter turn being made in the ribbon in each leg of the loop between the bridge and the pulley, because the ribbon must rest flat against the surface of the pulley at the end of the loop.

When the light valve is mounted on the core of the electromagnet in position for recording, the ribbon of the loop is approximately centered in the air gap between the wedge-shaped elevations on the electromagnet core and on the light valve frame. And, as has been explained, when the light valve is *strung* with the ribbon loop, the sides of the loop contract the width of the aperture through which the light beam from the lamp can pass to a width of just one mil.

Size of the Optical Image

The objective lens in the end of the exposure chamber has a two-to-one ratio, and so it reduces the optical image of the slit at the point where it is focused on the film to one-half the actual slit dimensions. This means that the image of the slit on the film is one-half mil wide and 128 mils long when the light valve strings are in their normal positions of rest.

In making a print from the film after it has been developed, a part of the sound track is matted off in the print, however, leaving a track just 100 mils wide on the final positive print that is released to theatres. (In-

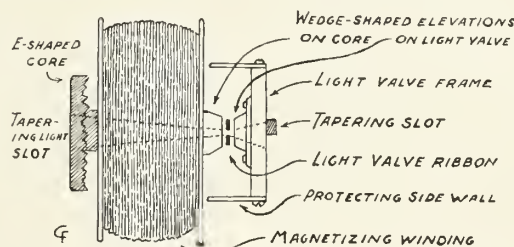


A—Side view of light valve mounted on the electromagnet.

cidentally, positive motion picture film stock is used as the negative in film recording machines, principally as an economy measure.) It is necessary to limit the width of the sound track in this manner in order to prevent it crowding into the picture portion of the print.

Stringing the Light Valve

The *stringing* of a light valve, which is the term used



B—End view of light valve mounted on the electromagnet.

for the operation of placing the loop of ribbon in position on the valve frame and adjusting it over the slot, is a very delicate operation that requires extreme care on the part of the recording engineer. The duralumin ribbon comes already cut in strips of the proper length, which are fastened to a sheet of aluminum for support. The ribbon must be handled very delicately with tweezers, because any kinks or twists or nicks in it will make it unsuitable for use.

The strip of ribbon is placed carefully in position on the light valve frame with the center of the strip looped around the insulated pulley. Then the two ends are threaded through the slots in the windlasses; and the windlasses are turned slowly by means of screwdrivers. This serves to twist the ends of the ribbon around the windlasses, securing the ribbon in place and drawing the loop up tight.

After the ribbon has been pulled firmly into position, the light valve is placed in a special frame under the lens of a microscope and the four piners adjusted until the two sides of the ribbon loop are exactly centered over the sides of the slot in the projecting wedge on the light valve frame and are spaced precisely one mil apart over the entire length of the slot.

From the above description, light valve stringing may (Turn to Page 22)

DETERMINING THE SPEED OF LENSES

By E. W. MELSON and S. LAWRENCE

of BAUSCH & LOMB

PART I.

THE term speed, or rapidity, as applied to a photographic lens, refers to the energy or intensity of light action on the sensitive plate. The stronger, or more energetic that action is, the more rapidly it produces the desired effect on the sensitive silver salts, and the greater is the speed of the lens.

It is needless to say that the volume of light here plays an important part. It is quite evident that the greater the volume of light acting on the plate, the more rapidly must the result be obtained; consequently, the more light the lens transmits to the plate—other conditions being equal—the greater is its speed. The *volume* of light therefore is one of the factors which determines the speed of lenses. Another factor is the concentration of the light, or its *intensity* when it reaches the plate. Other conditions, such as quality of materials, perfection of workmanship and rigid inspection, being equal, those two factors determine the relative speed in all lenses, regardless of type or make.

The volume of light is regulated by the aperture of the lens—the diaphragm through which it must pass in order to reach the plate. The larger the area of this opening, the more light it will admit. Thus, if we have two circular openings of different size, it is evident that the larger one will let through more light than the smaller one, in proportion as its area is larger—in other words, the volume of light is directly proportionate to the area of the opening. If we know how much larger in area one opening is than the other, we also know how much more light it admits.

From geometry we know that circular areas compare as the squares of their diameters; consequently the volume of light transmitted through the two openings respectively *must be directly proportionate to the squares of their diameters*.

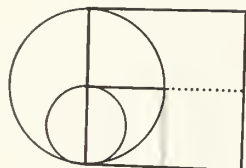


Fig. 20

In Fig. 20 we have two circles in which, for easier comparison, the larger is twice the area of the smaller. Inspection shows the square of the larger diameter to be equal to four times that of the smaller. Since the areas of the two circles are proportional to these squares, it follows that the larger has four times the area of the smaller and consequently transmits four times as much light. If the diameters are one inch and two inches respectively, the proportion of light is as 1×1 and 2×2 , or as 1 and 4. In the same manner diameters of two

inches and three inches give as the proportion of light as 2×2 and 3×3 , or as 4 and 9.

If the distance between lens and plate is the same the intensity of the same volume of light is also the same; there is no variation in intensity, and speed depends on the volume of light alone. Thus, in one and the same lens, or in several lenses of the same focal length, but different types, when used under the same conditions, *speed is proportionate to the square of the diameter of the aperture*. If we have one lens with, say four stops, 1, 2, 3, and 4 inches in diameter respectively, the relative speed of the lens with those stops will be as 1, 4, 9, 16. If we have several lenses, all of the same focal length and with stops as just mentioned, their speed will be the same with the same diameter stops, and different with different diameter stops. In short, *with the same focal length and the same diameter of aperture in any two or more lenses, their speed is the same; with the same focal length but with different diameter of aperture, the speed is proportionate to the square of the diameter*.

If the focal length—the distance of the plate from the lens—is different, the volume of light alone does not determine the speed, for the intensity, or the concentration, of the light varies with the distance between lens and plate. As the light travels farther away from the lens, its intensity is diminished.

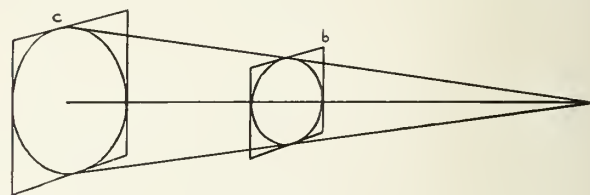


Fig. 21

Fig. 21 will help to understand this. A cone of light emanating from a source (a)—in this case the diaphragm opening in a lens—forms a disc of light of a certain size on a screen placed at (b) and a larger disc on a more distant screen (c). The areas of these discs, as we already know, compare as the squares of their diameters. Their diameters are proportionate to their distances from the source of light; consequently, the areas of the two discs must be proportionate to the squares of those distances.

The total amount of light falling on the two screens is the same, but on the more distant screen it is distributed over a larger area, and its concentration, or intensity, is necessarily less. In Fig. 21 the distance of the screen (c) from the source of light is twice the distance of the screen (b). Area being proportionate to square of distance, the area of the larger disc is consequently four times the area of the smaller one. Each corresponding part, or one-fourth, of the larger disc can therefore only receive one-fourth of the total amount of light intensity. Thus we find that the intensity of the light is inversely proportionate to the area. As the area is proportionate to the square of the distance, and as the distance here means the focal length of the lens, we conclude that the intensity of the light—and the speed of the lens, so far as it depends on that intensity—is inversely proportionate to the square of the focus.

If the volume of light remains constant, variation in speed is determined by variation in focal length only. In two or more lenses of the same aperture, the volume of light transmitted is the same, and speed is inversely proportionate to square of focus. The speed of a 3 inch and 6 inch focus lens of the same aperture will compare inversely as 9 and 36, that is, directly as 36 and 9. In other words the 3 inch focus lens will be four times as quick as the 6 inch focus lens.

So far we have presumed that when one of the factors, either the diameter of aperture or the focal length,

varied, the other remained constant, and the variation of the one factor alone then governed the variation of speed. We should bear in mind however, that with a variation in distance of the object there is also a corresponding variation in distance between lens and plate, with a consequent variation in intensity of light, even though the aperture remains constant. This variation is of little importance when the lens is used at or near its equivalent focal distance from the plate, as for general landscape work. But when we photograph near by objects requiring the plate at a greater distance than the equivalent focus, the variation requires consideration. Using a 12 inch focus lens, take a distant landscape requiring the plate at the equivalent

focal distance, and a near object requiring a distance of 15 inches between lens and plate. With the same aperture giving the same volume of light, the intensity of light—the speed of the lens—would be vastly different in the two instances. Being in inverse proportion to square of distance, it would be inversely as 12×12 and 15×15 , that is, as 15 x 15 and 12 x 12, or as 225 and 144, or as 25 and 16. Exposure time being in inverse proportion to intensity and speed it would be directly proportionate to square of distance between lens and plate, that is, as 12×12 and 15×15 , or as 16 and 25. The near object would therefore require fully one-half again the exposure required for the landscape.

(To be concluded in December)

The Photographer In Hollywood Doesn't Photograph

By BOB HUSSEY

IN the "credit sheet" at the start of every motion picture is listed the name of the photographer, but he isn't the one who really photographs the production. The chap who actually operates the camera never gets his name on the screen.

The photographer of a motion picture is the fellow who supervises the photography, but it's the Second Cameraman who handles the camera. He is the "Operative Photographer" of the picture, the one who manipulates the camera.

One has to be a Second Cameraman before becoming the photographer and, before that, one has to be an

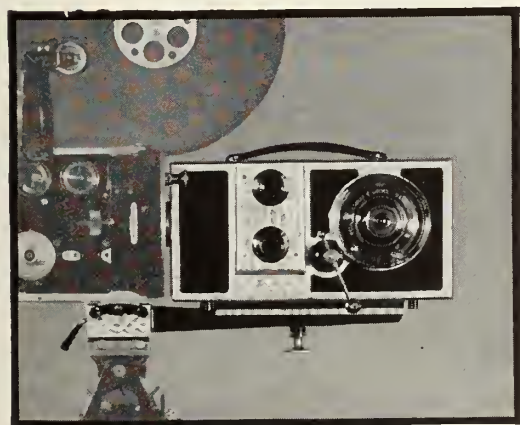
assistant cameraman. The Second Cameraman has finished his apprenticeship and is gaining finesse and polish in his vocation before moving on to the top standing.

On any movie set it is the photographer who "paints the picture." With the director he plots the action and camera movement, then proceeds to frame the scene as it will appear on the screen. It's up to the Second Cameraman to see that it gets on the screen in just that manner.

Having been given instructions on what is to be photographed, the Second Cameraman makes ready to photograph the scene.

(Turn to Page 25)

The Lens that brought the Mountain to Mahomet



B & H Cooke Varo Lens in photographing position on the Bell & Howell Camera.

BELL & HOWELL
Company

1849 Larchmont Ave., Chicago;
11 West 42nd St., New York;
716 North La Brea Ave., Hollywood; 320 Regent St., London
(B & H Co., Ltd.). Established 1907.

WITH admirable logic, Mahomet decided to go to the mountain when it declined to come to him. But in motion pictures it's costly, and often impossible, to move close to the subject at will. So Bell & Howell produced the Cooke Varo Lens, which "zooms" at the cameraman's wish—and the camera doesn't leave the spot.

At F 3.5 the range is from 40 mm. to 50 mm.; at F 4.5 from 40 mm. to 85 mm., and at F 5.6 and F 8 the full "zoom," from 40 mm. to 120 mm., is obtainable. Adjustable stops limit the "zoom" as desired. One crank controls all moving parts. The iris is varied automatically with the focal length to keep the f/ value constant. Gives critical sharpness and full anastigmat correction at all points of the "zoom." Close focusing is done with auxiliary lenses. Write for full details. Sometimes available on rental to responsible studios.

B & H Cooke F 2 Speed Panchro Lenses

The theater audience may register only vague dissatisfaction, wondering perhaps why an obviously good story affected them so little. But a camera man will unerringly put his finger upon the cause, a camera lens that was inadequate. B & H F 2 Speed Panchro Lenses, corrected for the blue and red rather than blue and yellow rays, are in use wherever successful photography is turned out. Eleven focal lengths, 24 to 108 mm.

B & H Cooke F 2.5 Panchro Lenses, at lower cost, meet many needs where such speed is adequate. Seven focal lengths, 35 to 162 mm. Write for prices.

PUBLIC WORKS MONEY FOR SCHOOL FILM

United States Government Producing Series of Talking Pictures to Be Distributed to Schools by E. R. P. I.

(Special to International Photographer from Its Own Bureau—at Washington)

The "New Deal" has gone "teacher" in a big way. Under allotments of money from Public Works Funds, by Secretary of the Interior Ickes, and funds appropriated for Emergency Conservation Work—a series of TALKING INSTRUCTIONAL FILMS is being produced by the Department of Interior. Production crews have been working in the field since last June. It is estimated that one year will be necessary to complete the first series of ten subjects, especially written by the University of Chicago teaching staff. The first series will demonstrate geologic phenomena and will be released by Erpi Picture Consultants Inc., of New York City, a subsidiary of Electrical Research Products Inc.

Field Photography is being done by veteran Camera-man Walter Scott, of New York Local, International Photographer, and Paul Wilkerson, of the same local. It is estimated that it will be necessary for them to travel over 10,000 miles to cover assignments on the first series.

Emergency Funds Used

The National Parks Service, Interior Department, has been allotted funds by the Public Works Administration, of which Secretary of the Interior Harold C. Ickes is Director, and Robert N. Feckner, Director of Emergency Conservation Works, for production of the series, which it is estimated will, when completed, cost \$50,000. The films will be scored with lectures written by the University of Chicago faculty and distributed in 16mm. size.

Professor Carey Croenis, of the department of geology, of the University of Chicago, has written the scenarios, which have been checked by Erpi Picture Consultant experts. Such titles as these have been selected for the first series of teaching film subjects: "Running Water," "Ground Water," "Atmospheric Gradation," "Mountain Building," "Volcanoes," "Snow and Ice," "Formation of Soil," "Fossils," "Life of the Past," "Weather and Climate," etc.

The addition of sound-lectures will be supervised by Richard F. Chapman and James A. Brill, of the Erpi Picture Consultants Inc. Directing of productions will be done by geologists furnished by the Department of Interior, who have already spent six months in the field on the work.

Field work will be continued throughout the winter in order to get the necessary scenes without having to make them in the laboratory. Such scenes as geysers, glaciers, etc., will be made in National Parks. The Grand Canyon of Arizona will represent the outstanding example of erosion, while such scenes as the latest "cave-in" at Niagara Falls will be brought right into the classroom for students by means of the talking picture film.

This represents probably the greatest advance that has been made in the production of educational talking picture films and is characteristic of the attitude of the

New Deal to go ahead and do something instead of talking about it.

Leading educators will add their voices to the films at the ERPI Studios, in New York City. The versatility of the talking picture as a medium of expression brings to the classroom the personalities of outstanding leaders in the educational field as well as difficult experiments, illustrations from life situations, and will be a tremendous enrichment of the school curriculum.

C. C. C. Help

Boys from the Civilian Conservation Corps have been assigned to help on this work by Robert N. Feckner, Director of Emergency Conservation Works. A corps of the C. C. C. boys have been assigned from Fort Hunt, near Washington, D. C., to work in the laboratory of the Interior Department at Washington, while other C. C. C. workers will assist in the field operations.

A very complete system of editing and scoring has been organized by Herford Tynes Cowling, at the Washington, D. C., office of the Interior Department, for the government. Cowling has been on this work since last March, when he was called to Washington to install facilities for motion picture production in the National Parks Service. It will be remembered that for seven years Cowling was in charge of production and editing of Eastman Classroom films for the Eastman Kodak Company, at Rochester, prior to Mr. Eastman's death. He has probably had more experience in this class of work than any other man, and is recognized as an outstanding expert in educational film production.

The value of these educational talking pictures in classroom teaching has been established by careful experimentation. The U. S. Bureau of Education has from time to time made surveys of the requirements of schools throughout the country to determine their needs in the line of visual-instruction; films. Mr. Elworth C. Dent, Visual Instruction Expert, and member of the staff of *Educational Screen*, a Chicago publication, has been engaged to assist in the work. Mr. Dent was for many years in charge of distribution of films for the University of Kansas, and has taught classes in visual-instruction.

Radio Tie-Up

No doubt this innovation by the U. S. Government will serve to promote the use of sound picture films in more public schools systems throughout the country. It has been suggested that the presentation of these films might be tied-in with nation wide radio-broadcasts on the same subjects to be picked up by the classroom radio. Slow motion photography, microphotography, animated drawings and reproduction of relevant sounds will be added.

It is realized that it will be impossible to record the sounds of running water, geysers, rainfall, storms, etc., in the field operations—these sounds, as usual, will have to be incorporated by dubbing in the studio—in fact, very little use has been found for sound recording during field operations.

While these films are intended primarily for classroom uses, they will also be of interest to adult groups in the University Extension courses. The films will be both sold direct to schools and rented through rental libraries and Extension Film Services of universities. The University of Chicago is sponsoring the series from an academic point of view.

COMING IN DECEMBER

In his interesting article "The Relationship Between Continuity and Cutting," by Paul E. Bowles, in the October INTERNATIONAL PHOTOGRAPHER, it was announced that he would conclude it in this issue, but because of his absence on location, Part II of his article, will not appear until December.

BRULATOUR SERVICE

advances another important step by providing now (ready for immediate delivery in Hollywood) especially constructed and finished metal container for Tropical packing of all Eastman Motion Picture Films ———

Details are bound to be vitally interesting to every expedition photographer and executive ———

J. E. BRULATOUR, INC.

The Mechanism of Vision

In an article entitled, "The Cinematography of Nature," which appeared in the June, 1933, issue of this magazine, the author made the following statement: "As a result of following the practices enjoined" (upon students of occult science) "he (the author) has succeeded in developing within certain limits, powers of extended vision and hearing. These have enabled him to test for himself the

truth or otherwise of many of the teachings of occult science, among them, those concerning the existence of the Akashic Records.

"At the risk of straining the credulity of the practical minded readers of this magazine, he ventures to state that he has succeeded in seeing clairvoyantly events both of the near and distant past and in hearing the sounds which accompanied them. He has even demonstrated this power under the strictest scientific tests."



As an example of the scientific possibilities of clairvoyance, some results of its employment in archeological research followed the statement quoted above.

In this article the author, with some hesitation, because of the limitations of his power and the incompleteness of his researches, offers the result of attempted clairvoyant investigation into the mechanism of physical vision. Before presenting them, however, he desires to make it clear that the clairvoyance of the occult investigator has little or no relation to the passive and sporadic psychism of the medium, crystal gazer or fortune teller. True clairvoyance is a positive power of seeing on superphysical wave lengths; it implies an extended range of vibratory response to light waves, for it enables its possessor to see not only on those physical light vibrations beyond the visible spectrum, but also on octave after octave of superphysical wave frequencies.

Professor Hans Dreisch, philosopher and embryologist, proclaims his belief in clairvoyance in his "Crisis in Psychology", from which is quoted his definition of this faculty: "By clairvoyance we understand the abnormal acquisition of knowledge and facts other than another person's knowledge, i.e., about material states or conditions. Clairvoyance may relate to the past, the present and probably also to the future.

There are two theories before the scientific world concerning the nature of light, known as the corpuscular and the vibratory theories. There has been a tendency to combine them in the word "wavicle" applied to electrically charged particles moving on varying frequencies.

As readers of this magazine are doubtless well aware, white light received direct from the sun consists of the small portion of the energy radiated by the sun to which our eyes are sensitive. When passed through a prism this white light is divided into the seven colors of the spectrum; the proportionate strength of the red and blue rays depends upon the temperature at the source of the light radiations.

This radiated energy is thought by physicists to be due to collisions between the bodies—electrons—within the atom. Such collisions may cause the electron to follow a new path, and on this change surplus energy of the electron is released; this surplus is called "aquantum", and the color of the resultant light depends upon the amount of energy emitted. If relatively small, then the vibrations of the "ray" will be slow and the color red; if great, with high wave frequency, then the color will be blue or violet.

Attempted clairvoyant investigation of the nature of light and the sense of sight would seem to suggest hitherto unrecognized phenomena complementary to those already known, which are admittedly insufficient to explain the operation of the sense of physical vision.

In addition to this vibration, the light energy also moves forward at the supposed known speed of 186,000 miles per second. The forward progress made in one complete vibration in its turn depends upon the speed of that vibration; thus, in the relatively slow vibration of red the forward motion is considerable; in blue and violet it is less.

Thus the scientist speaks of color in terms of wave length, giving three one hundred thousandths part of an inch for red and half that for violet.

When the author attempted to study light rays clairvoyantly, they appeared to consist of particles of electromagnetic energy continually emitted from and returning to the source of light. The outflowing power seemed to form the sheath, and the returning the core, of the light ray. This "pulse" of power from the sun would seem to be a manifestation of the continuous triple process of the creation, preservation and transformation of the universe.

Sir James Jeans, in his recent book, "The Mysterious Universe," shows that this conclusion is not scientifically unacceptable concerning the origin of the nebulae, from which the suns and planets rise. He says: "The type of conjecture which presents itself somewhat consistently is that the centers of the nebulae are of the nature of 'singular points' at which matter is passed into one universe from some other and entirely extraneous spatial dimension, so that to a denizen of our universe they appear as points at which matter is being continually created." In this "guess" he comes very near to the occult doctrine of continuous creation. Sir James Jeans elsewhere says: "The tendency of modern physics is to resolve the whole material universe into waves and nothing but waves. These waves are of two kinds: Bottled up waves, which we call matter, and unbottled waves, which we call radiation or light."

Occult investigation would seem to agree with the modern physicist that the material universe and all it contains is built of light.

Both of the scientific theories—the corpuscular and the vibratory—are apparently necessary in order fully to explain the phenomenon of vision. The physiologist is not yet able to give a complete explanation of the mechanism of vision. The breaking up of the light ray into colors and its perception as color by the consciousness are not yet understood. The secret of the "cones" and "rods" of the retina has not yet been revealed, though an electrochemical process is suspected; the rods being thought to function chiefly as receivers of the intensity of light, whilst the cones make possible differentiation between the colors of the spectrum.

Clairvoyantly, the light which impinges upon the retina, and particularly upon the *macula* or sensitive spot, is seen to consist of a continuous series of particles of electro-magnetic energy, flowing between the seer and the object seen at differing frequencies. The retina appears

By GEOFFREY HODSON

Author of "Science of Seership", "Some Experiments in Fourth Dimensional Vision", etc.

to act somewhat as an electrical rheostat, transforming the light energy reflected from the object in terms of voltage. This energy is also specialized or attuned to the vibratory rate of the individual, after which two changes it flows across the intervening space into the optic disc.

From the optic disc the current is conducted along the optic nerves of each eye to meet at the optic *chiasma*, where a further change of "voltage" occurs. Here the two sets of nerves, one from each eye, meet and some of the fibers cross over, whilst others do not. From the chiasma they convey the transformed light ray to the visual areas in the occipital region of the head.

In these areas of the brain, the electro-magnetic energies of the light ray are again transformed, their voltage being further changed, so that they can be "picked up" by the intelligence using the brain.

Clairvoyance is part of the sixth sense, as yet latent in the human organism, though becoming active in certain people. In later races it may become fully developed and used as a normal means of cognition. It is capable of being brought into activity in advance of the normal period by the application of known principles.

One function of the etheric double is to bridge the gap between the physical and the superphysical. In its densest state it impinges directly upon the gaseous level of the physical world and in its rarest upon the lowest level of the emotional world, the superphysical light of which is one octave of vibration above the physical spectrum in terms of frequency. The absence of the etheric double, as in anasthesia when it is extruded, produces unconsciousness, the connection between the ego or higher consciousness and the brain being temporarily severed at the etheric level.

Since we have now traced the passage of light rays from the physical to the superphysical, we must next consider the superphysical processes in physical vision. This demands some knowledge of the method by which the ego is incarnated in his physical vehicle. Searching for the seat of egoic consciousness as in the brain, the author finds it to be situated within the third ventricle—a cavity in the middle of the head, filled during life with cerebrospinal fluid. Here it is seen clairvoyantly as an intensely brilliant superphysical light, the central glow of which includes the pituitary and pineal glands. This light spreads out over the whole brain, but diminishes in intensity in proportion to its distance from the third ventricle. The ego* is the true seer and knower, the brain is but an instrument. Only a fragment of egoic consciousness is incarnated in the physical body, which constitutes the ego's sole means of contact with the physical world.

The ego obtains its visual contact with the physical world through the mechanism of vision and its other contacts through the other senses, each with its appropriate external organs, internal areas in the brain and connecting nerves. One important function of the ego is to synthesize the many different experiences which it gains through the physical body. It collects all these impressions from the physical world, combines them and decodes them from their vibratory state into terms of knowledge, which are then projected into the appropriate area of the brain,

via the third ventricle and the pituitary and pineal glands, these latter appearing to serve somewhat as amplifiers or tubes in a radio set.

In the case of vision, the ego also fuses into one the two separate visual impressions received, one through each eye. Most of this work of synthesizing, fusing and decoding is done by that aspect or fragment of egoic consciousness which, as stated above, is established in the third ventricle of the brain.

A third factor must now be considered in the study of the superphysical aspect of physical vision. While making clairvoyant observations of the operation of the sense of sight, it became clear that *a force was flowing out from the seer to the object seen.*

This outflowing energy is an aspect of the life-force of the individual, and is the complementary spiritual energy without which vision by the physical light ray alone would apparently be impossible. It would appear that man can only see those objects to which he can respond in terms of life force. Our visual range is limited to objects which are on, or reasonably near to, the vibratory rate of the life-force manifested in earth humanity. We probably have our own sidereal system, which may be quite invisible to those dwelling in a solar system, universe or cosmos manifesting on a different fundamental note or rate of vibration; whilst their sidereal system, and indeed their solar systems, will be invisible to us.

In short, we can only see the things with which we can vibrate synchronously, as far as the inner life-essence of our being is concerned. Plotinus in his "Essay on the Beautiful" voices the same idea: "For it is here necessary that the perceiver and the thing perceived should be similar to each other before the vision can exist. Thus the sensitive eye can never be able to survey the orb of the sun, unless strongly endowed with fire, and participating largely of the vivid ray."

While it seems impossible for a person to see objects to which he cannot achieve vibrational response in terms of life, there are cases where a blind person has perceived physical objects. The possibility of seeing without eyes is not entirely remote, for whilst most ants are able to see the ultra violet rays, the Anommas, i.e., "without eyes", behave as if they saw; although blind they have been known to react to the shadow of a cloud. They have very highly developed senses of smell and touch and there is evidence of a "photodermic sense", that is to say, a sensitiveness to light through nerve endings in the skin. It has also been found that blindfolded sensitives under hypnosis can distinguish light and shade and even objects held near the breast or abdomen. Of the two factors in physical vision, ocular response to the light ray and synchronization of life-force, the latter alone appears to be indispensable.

The author himself has found it possible to see clairvoyantly physical objects, with the eyes shut, using wave lengths beyond the visible spectrum. This opens up another aspect of the subject of vision, one which demands a separate study. At this point, therefore, the subject is left, perchance to be pursued in later articles.

* Vide "The Causal Body," by Maj. A. E. Powell.

Glass, Miniature and Projection Combined

By PAUL R. HARMER



Notre Dame—Daylight

Notre Dame—Night

ONE of the finest process shots made in recent months was engineered by the R.K.O. Process department, headed by Vernon Walker. He was assisted by Don Jahraus, Billy Williams and Maurice Larringa, in a recent production entitled "Behold, We Live," starring Clive Brook and Irene Dunne.

This process shot is outstanding for two reasons: first, because of the various combinations and mechanics; second, because the job was excellently done.

The script called for a long shot of Notre Dame Cathedral in Paris, a section of a bridge over the River Seine in the foreground and a light change from night to full daylight illumination, all in 100 feet of film.

Offhand, one might say "just another trick shot, but if one will only stop and consider the intricacies of matching a glass, a miniature set and a projected background in addition to a light change, all in one shot with no

cutaway, and all of this used again as a projected background for another shot, with people in the foreground, the real difficulties become apparent to the initiate.

The roof of the cathedral was painted with translucent paint, which gave the slate shingles a sheen. The clouds in the background overlapped each other and were blended just enough to give them a natural roundness with perspective. A little back light on the water gave it the necessary life to make it sparkle.

The automobiles traveling over the distant bridges were lighted with the small wires which pulled them along.

In Fig. 1 and 2 we have the plan and elevation of the set-up. In Fig. 3 and 4 we have the lens view of the glass and miniature, showing distinctly the matte line. The background is projected clouds, so is not shown separately.

Numeral 1 is a 35 mm. lens; 2 is an 8 by 10 foot optical plate glass in a rigid frame; 3 is water; 4 is the miniature set shown in Fig. 4; 5 is 36-inch carbon spotlights, spread to a wide angle and throwing their light on the back drop; 6 is a transparent cellophane sheet fastened on a rigid wooden frame. This cellophane is painted with clouds. Number 7 is an electric motor geared to move the cellophane screen along horizontally at steady speed; 8 is a transparent cellophane roller curtain, the paint fading from transparent to opaque. This dimmer curtain is geared to motor 9; the lights used for illum-

SPLICER FOR 8 MM. MOVIE FILMS, ALSO 16 MM. SOUND AND SILENT FILMS

Bell & Howell announces a new splicer that handles all sub-standard motion picture film—16 mm. silent, 16 mm. sound, and 8 mm.—with equally good results and no alteration of mechanism.

This splicer, which is called the B & H Triple-Purpose Splicer, is unusually easy to operate efficiently. It will certainly be a good friend of the home film editor, as well as being ideal for doctors, schools, industrial concerns and other large users of sub-standard films.

A major feature is the arrangement for convenient application of the cement without the bother of lifting the non-scraped film end. Cement is applied merely to the upper film surface. Then a touch of the new automatic film shifter quickly flips the films to correct splicing position as the clamp is closed.

The pilot pins are retractible, allowing instant and easy removal of the film without possibility of injury to the perforations.

The splicer has an attractive metal base which maintains the pilot pins in especially accurate register, even under conditions of extremely hard usage or rough handling. The glass of the cement bottles is completely enclosed and protected.

CATALOG OF FREE LOAN FILMS

The Bell & Howell Company has just compiled a very valuable catalog telling where 16 mm. silent films dealing with geography, travel, and natural resources can be secured on a free loan basis.

The catalog consists of 40 mimeographed pages, 8½

by 11 inches in size, and these pages are crowded with the names and descriptions of films of excellent interest value. Also listed are the names of firms and other organizations furnishing the films.

Here are some of the subjects taken at random: Cairo to Capetown, Roving the Mediterranean, Through the Norway of America, Communing with the Heavens, Policing the Arctic, Seeing London Town, The Highlights of Scotland, Our Daily Bread, Girdling the Globe, Romantic Mexico, Sulphur, Oxygen the Wonder Worker, Wings of the Fleet.

Owners of 16 mm. movie projectors will find this catalog of great service. Copies will be mailed on request by Bell & Howell Company, 1801 Larchmont Avenue, Chicago.

SHORTS NEEDED

Jayant Desai, director of Ranjit Film Company, Bombay, India, is urging that shorter films are needed in India. At present, says Mr. Desai, the average footage for pictures in India is fourteen to sixteen reels and sometimes twenty to twenty-five songs are included in the working script.

MITCHELL IN INDIA

Cables from Bombay, India, announce that Mr. Charles H. Christie, vice-president of the Mitchell Camera Corporation, recently addressed a large audience of Indian producers on the subject, "Film Production in America and the Orient." The meeting was held under the auspices of the Motion Picture Society of India. The distinguished Mitchell representative created a most favorable impression upon the Indian producers.

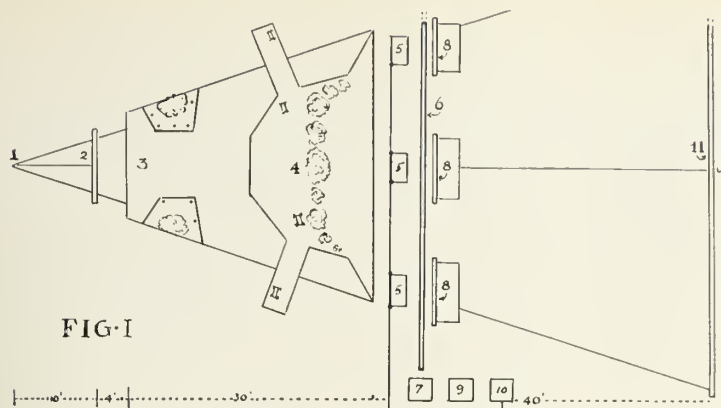


FIG. I

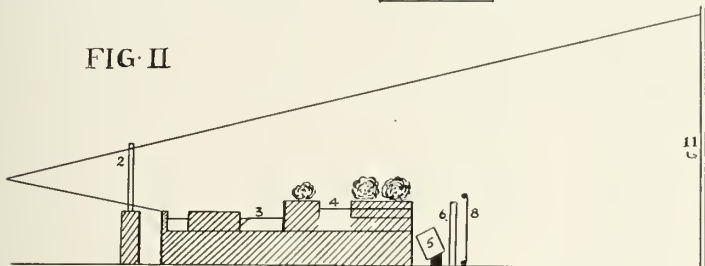


FIG. II

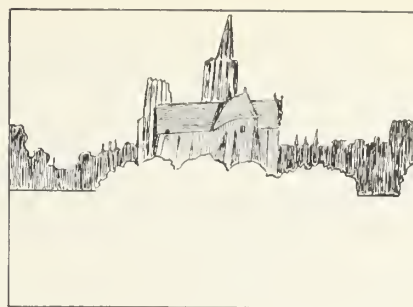


FIG. III

GLASS

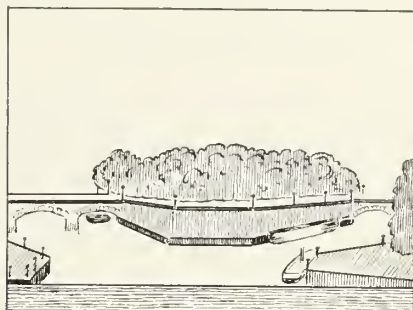


FIG. IV

MINIATURE

ination and projection are operated through rheostat 10. The back drop, 11 is a plain white sheet whereon the clouds are projected. Another small rheostat not shown here regulates the lights in the cathedral, the street lamps and the headlights on the moving cars.

This film was made into a print and used for a projection back for the scene where Irene Dunne stood on the bridge overlooking the river, where she seriously contem-

plated suicide. This shot was made with a 75 mm. lens and a small section of the bridge in the foreground and about six feet back of this was an 11 by 14 foot projection screen.

R.K.O. can well be proud of the men who have done so much to improve process photography. Everyone has marveled at "King Kong," "Son of Kong," and many others just as cleverly done.

NEW 1000-WATT 16 MM. PROJECTOR THROWS BRILLIANT 15 BY 20 FOOT MOVIES

The New Filmo 16 mm. 1000-watt Projector threw 15x20-foot pictures of absolutely theater brilliance in a recent showing in a big Chicago theater auditorium, according to R. Fawn Mitchell, Manager of the Technical Service Department of Bell & Howell.

The theater, which has no balconies, seats 1400 people, and the finest details of the pictures were perfectly clear from the rear seats. The throw was 100 feet, and a 2-inch lens (regular equipment with the projector) was used. The brilliant quality of screen result was unanimously conceded by all observers, it is stated.

The films used were of average photographic quality, and the prints were fairly well worn. They were assuredly not "hand picked," reports Mr. Mitchell, but were selected at random in order to arrive at an absolutely fair appraisal of the projector's performance.

The manager of the theater, who was present, stated that he could see little if any difference between the 16 mm. projection and that which he ordinarily secures from a 35 mm. arc projector run from the same booth where the Filmo 1000-watt Projector was temporarily ensconced.

The projector excited considerable comment from the observers due to its most unusual and advanced design. The machine has radically different "lines" from any existing projectors, either 35 mm. or sub-standard. It is said to embody features never before incorporated in any projection machine.

According to the Bell & Howell Company, the new 1000-watt Filmo, because of a tremendously efficient optical system, provides at least 80% more brilliance than the 750-watt Filmo models which have already established a reputation for extreme brilliance.

Obviously, the performance of this new machine is remarkable indeed. It opens up an entirely new field in auditorium projection of 16 mm. film.

"THE OVAL PORTRAIT"

Richard Bare, student director of "The Oval Portrait," the U. S. C. silent film previewed at the Egyptian Theatre, Hollywood, last month, has been honored by appointment to be assistant to Dr. Boris V. Morkovin, head of the Department of Cinematography of that University.

Only recently Mr. Bare told in detail the story of the filming of this picture in THE INTERNATIONAL PHOTOGRAPHER and his elevation to the new job is an honor worthy of his achievements. His picture, the Paul Muni award for 1934, promises a fine directorial future for the student director.

LEE GARMS IS BUSY

Lee Garms writes from New York that from all indications the picture on which he is now working is sure to be a knock-out. The title is "Traveling Clown," a Hecht-McArthur Production, in process of filming at Eastern Service Studios, Long Island.

Scheibe's FILTERS

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Has Infra-Red Photography a Place In Commercial Work?

By FRED S. TOBEY

(Feature Writer and Photographer of the Boston Transcript and a Brother of Our Own Bob Tobey.)

IT is somewhat astonishing that the perpetual search for new instruments with which to stir public attention from its lethargy has not focused more attention upon infra-red photography. From the scientists' quarter there has been no lack of interest; on the contrary, much effort has been directed to research on the theory that discoveries important to warfare lie not far away. As to the commercial photographers, however, it seems to have escaped all but an isolated few that there is a commercial market today for infra-red pictures. To be sure, the public has no exclusive right to lethargy.



A striking appearance makes the infra-red photography valuable commercially. Still life by the "light" of a warm flatiron. Infra-red photography by Fred S. Tobey and Donald M. Came.

Specifically, the implication is this: If a degree of quality and a measure of novelty are characteristics that practically assure the success of any product, then by virtue of having more than a share of the latter attribute, infra-red photographs get off to an excellent start by themselves. As to the quality, that is, the photographer's hunt, of course, and quite possibly the stumbling block that has led him to drop the thing after spoiling a dozen plates or so. For it is true that to acquire anything resembling an adequate technique in this type of work, the photographer must be possessed of a zeal reminiscent of those sturdy pioneers who used to tramp over the countryside with a light-proof tent and a couple of bird-baths in the interest of the wet collodion process.

Since the development of emulsions sensitive in a practical degree to infra-red "light"—the invisible radiation so low in the spectrum that it may be characterized as a heat ray—two angles of this type of photography have been exploited in the press: First, the spectacular angle, with illustrations to show how the infra-red ray will carry a true image over a distance of hundreds of miles, while visual radiations bring only a confused mass of light; and second, the supposed future usefulness of the ray in warfare, when the production of speedier emulsions will have made possible the accurate photography of enemy fortifications over long distances and through atmospheric haze. The slow speed of emulsions prohibits this in present practice. Only under ideal conditions may

aerial photographs be made by infra-red light, because of the relatively long exposures necessary.

To return to our theme, the third application of infra-red photography, and the one that has been neglected, is its practical use in every-day commercial work, taking advantage of the ultra-sharp definition obtained, and even more of the striking characteristics which draw attention to the infra-red picture wherever it is shown.

As for those whose sensibilities are offended by the thought of making an appeal purely on the ground of the unnatural qualities of these pictures, let them open any of the more expensive magazines and note the growing tendency toward the use of heavy black areas and high contrasts to gain effectiveness in the advertising pages. These are the major characteristics of the infra-red picture: Great clarity and definition; complete elimination of detail in shadow areas, which print totally black; high contrast between these areas and the subject. Properly composed, therefore, the infra-red photograph may achieve a striking effect while losing nothing from the artistic viewpoint.

During the past year and a half Donald M. Came, of Brookline, and I have devoted some time to securing a series of pictures for the Boston Evening Transcript, to show the various applications and effects of infra-red light. With the cooperation of Joseph Garside, of E. W. Wiggins Airways, we have made altitude flights to test a new Eastman emulsion, getting fair results with exposures cut down to one-fiftieth of a second. We have taken distance shots and close-ups on the ground, and have made laboratory exposures by the irradiation from hot objects.

While the intent of this series of pictures has not been a commercial one in the sense that the word is used above, the variety of pictures obtained has been great, and some of them have been of a type readily adapted to commercial uses. None of the usual salesmanship was necessary in disposing of the latter outside the newspaper field.

One photograph, for example, was used as a cover picture by a trade magazine, and although the subject, a new Federal building, was one that had been prospected until it hurt, the cover presented a striking appearance that resulted in an extra call for that issue of the magazine.

The above point is cited as a slight relief from theorizing.

Looking at it from the commercial photographer's viewpoint, there is an important difference between infra-red photography and the usual sort. While it is generally thought advisable to have an order for a picture before you take it, this hardly holds true in infra-red work. It is much safer to take the picture first and then seek a market.

The reason for this is that you never know until you take the plate out of the fixing solution just what your infra-red picture will turn out to be. It is a source of constant amazement to view the widely varying results obtained under conditions which, to the eye, appear almost identical. This is due, of course, to the fact that although the camera is focused and the picture composed by visual light, only the invisible infra-red rays act upon the plate. The photographer can no more than conjecture as to the power and distribution of the infra-red radiation present at the time the plate is exposed. In general, areas subjected to direct sunlight will register strongly, while other surfaces, though they may appear very bright, show scarcely at all. Objects in shadow, even though it be not a deep shadow, will not appear on the plate, however well it may be exposed. Grass and foliage reproduce as pure white, appearing snow-covered, while a bright blue sky turns out dead black, in effective contrast to marble-white clouds. Evergreens, unlike the leafy foliage, photograph normally.

These are generalizations, however. It is perfectly

possible to achieve a black tree if you try long enough, or a white sky, instead of a black sky, from a blue one. This inclines to be discouraging at times, as in the case of the writer, who made eight trips through the East Boston traffic tunnel on as many different days, trying to get a picture of the Boston skyline that would be something better than a Daguerreotype. To the eye, conditions were ideal. To the camera, with its opaque infra-red filter over the lens, they were anything but that. Some odd diffusion of the infra-red rays over the city made it impossible to get the desired result. From South Boston, on the other hand, the result was exactly what experience had indicated it would be.

That is why the safest policy is to take the picture first, and find the market afterward. It sounds a little silly to hand in a report that a peculiar diffusion of invisible rays in a certain spot makes it impossible to fulfill your contract. One can even conceive of a painfully involved situation arising, dependent entirely on the legal status of an invisible ray.

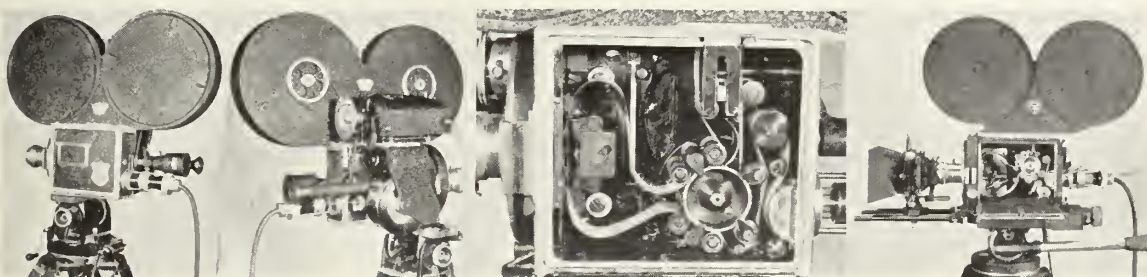
It would be premature to claim that infra-red photography will ever make any serious inroads on the field of orthodox commercial photography. It is a reasonable prediction, however, that whatever may be its future in warfare, it will find a definite place for itself in commercial work, and in news photography as well.

BE YOUR OWN PRODUCER AND NEWSREEL CAMERAMAN

Why not adapt your Bell & Howell or your Mitchell camera to the single system picture and recording. Be your own producer and newsreel cameraman?

Art Reeves, president of the Hollywood Motion Picture Equipment Company, has a complete stock of the necessary parts, made especially for this purpose. Some machine work is necessary on the camera, but the parts are all ready to put in place and will work perfectly.

The tachometer and bracket come separately or together. This tachometer reads in frames per second or feet per minute. The motor is the new automatic speed control type and when properly set will come up to 90 feet per minute and remain there through the entire change in load of a thousand feet of film running through the camera. The motor is rated 1/12 horse power, but will actually deliver about 1/8 horse power if this were



The recording lamp is a specially built short tube glow lamp which fits into and locks in position. Pulling on the cable will not disturb the position of the filament with the optical system, which is the famous "Art Reeves" dual optical system.

It is ground to pass two beams of light of different widths simultaneously on to the film. The wider beam of light responds to frequencies of 25 to 5,000 cycles and the narrower beam of light responds to frequencies from 4,000 to 16,000, except that the narrow line of light is recording all the time, adding to the exposure of the wider line of light, although not changing the quality of the lower register.

ever found necessary. This reserve power is very useful in cold climates.

On the rear of the motor is a 3-pound flywheel and the belt pulley which connects with the pulley on the crankshaft. The belt connecting these two pulleys is of rubberized fabric.

The bracket which holds the motor in place also holds the 10-pound flywheel which is connected with the main sprocket. The motor control switch is located on the right hand side of the motor in a most convenient place.

The focusing microscope has full ground glass image, right side up. All of the parts are precision built, with ruggedness and portability fully considered.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912

Of International Photographer, published monthly at Los Angeles, State of California, County of Los Angeles, for October, 1934.

Before me, a notary public in and for the State and County aforesaid, personally appeared Silas E. Snyder, who, having been duly sworn according to law, deposes and says that he is the editor of The International Photographer and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 537, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher INTERNATIONAL PHOTOGRAPHER, Los Angeles, California; Editor, Silas E. Snyder, Los Angeles, California; Managing Editor, Silas E. Snyder, Los Angeles, California.

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SILAS E. SNYDER, Editor.

Sworn to and subscribed before me this 15th day of October, 1934.

HAROLD W. SMITH, Notary Public.

In and for the County of Los Angeles, State of California. (My Commission expires March 7, 1937.)

Please mention The International Photographer when corresponding with advertisers.

Thoughts On Projection Printing

THE average American amateur photographer has been accused of being strictly a negative maker. As a print maker, he seems to fall far behind European amateurs. If this is true, and no doubt there is some truth to the charge, it is a pity, for it means that we have progressed only up to a certain point, and there have quit cold. It is interesting to note how Europeans work. They have not, as a general thing, the money to spend on their hobby as has the average American amateur, and as a consequence, have to guard carefully their exposures. They are not spendthrifts, each negative exposed must yield a good print, and this in itself produces better work, for it can be seen that where pennies must be accounted for, the amateur is going to study his hobby in order to make the most of it within the limits of his purse. The miniature camera has helped us to be careless, for with it, a dozen to thirty-six negatives can be made at a loading, and we feel that a number of exposures wasted are of no importance. The European, however, even with a miniature camera, is forced to make each shot count. In short, he makes fewer pictures than we, but on the other hand, his pictures are, in most cases, superior. It is a case of quality rather than quantity.

We Americans have the production of a negative down pat. We have tamed the great evil "grain" with intricate formulas which perform miracles. We produce technically perfect negatives by the hundreds. But after that—what? Our prints are ordinary reproductions of the negatives, nothing more. We do not seem to be able to include the little niceties in prints which characterize the European prints.

It is a known fact that printing paper has not the ability to reproduce everything in the negative, and so a certain amount of skillful art work is necessary in order to produce a full, rich print. I happen to be by nature a "purist," that is to say, I believe that when certain art work is necessary on a print it no longer is photography, and I feel that if it is necessary to go into art work in order to produce satisfactory prints, I might just as well go in for painting and produce genuine works of art. Nevertheless, I am aware of the necessity of a certain amount of hand work on a print, this including dodging, trimming, spotting, etc. These are common expressions, yet it is surprising how few workers make use of them.

Projection printing is the accepted method of making prints today. As negative sizes have been reduced, the need for enlarging becomes greater. I can safely say that in these modern times very few amateurs work with negatives larger than 4x5 inches. Indeed, the miniature camera might be considered almost standard, although sizes up to 3¼x4¼ are exceedingly popular. The need for enlarging these small negatives is apparent, hence the amateur should pay some attention to the producing of satisfactory prints and not be too easily satisfied with the first print which develops in the developing tray. The careful worker, as has been mentioned, makes comparatively few negatives, but each one is usually perfect. He may work on a single negative for a long time before he gets just the right quality and tonal values he seeks in

the print. He may use dozens of sheets of enlarging paper, trying this kind, that surface, etc. In the end, he will have only one print—but what a print it will be. One such print is worth a dozen which have been printed in the usual careless fashion. All too many amateurs are satisfied with their efforts if they can get a recognizable print of Aunt Tillie or Uncle Henry—but photography is more than this.

So it would seem that with a little more care we could all make real photographic prints of which we would be proud. But more attention will have to be given the technique of projection printing. Enlargers available are perfect from every standpoint these days. One can hardly blame equipment, still many cannot seem to turn out decent prints. A great deal of discouragement comes from home-made enlargers which are fashioned from odds and ends—and without any true understanding of the principles involved. While good manufactured enlargers are costly, they often prove to be the most satisfactory and economical in the long run.

Of enlargers as equipment, little need be said. They abound and flourish in great numbers. There is no question but that the vertical type is most popular because of its ease of operation and compactness. Recent investigations have shown the desirability of using Photoflood lamps as the illumination source. They reduce the exposure time considerably, but they are best used with a rheostat control device by means of which the intensity of the lamp can be increased or reduced at will, thus affording greater control in enlarging. This idea applies particularly to miniature camera enlargers. Another idea recently brought forth calls for the use of regular chloride (contact) printing paper, such as Velox, Azo, Noko, etc. The speed of such papers is naturally much slower than that of the regular bromide and bromo-chloride enlarging papers; hence, the use of a Photoflood lamp is strongly suggested in cases where these papers are used.

A filter is often used on the enlarger to permit focusing and placing of the image directly upon the sensitive paper. Such filters are usually of an orange-red color. Some advanced workers, however, use a green filter, claiming that some of the modern enlarging papers fog under the usual orange-red filter. For average papers, however, the orange-red filter will be found sufficiently safe.

Miniature camera devotees should be cautioned about contrast enlarging papers. As a general thing, contrast papers have a tendency to produce more grain than the normal or soft grades. Possibly the amateur becomes involved by making his negatives too thin, thus demanding the use of contrast papers. The better method, then, is to produce rich, meaty negatives which can be reproduced to best advantage on normal or even soft papers.

Negatives with the minimum of grain of this nature can be secured by a slight over-exposure and slight under-development. The proper grade of paper can then be selected to suit the negative without the necessity of depending upon a contrast paper to show what little there is in a thin, weak negative.

By KARL A. BARLEBEN, JR., F.R.P.S.

The question which every beginner invariably asks sooner or later is "What kind of enlarging paper should I use?" Now there is a question! Miniature camera enthusiasts have a notion that their tiny negatives require a particular kind of paper, but this is obviously poppycock. The paper to be used for any given negative, regardless of size, is a matter for the individual to decide. First, the grade of paper must match the physical characteristics of the negative—that is to say, contrast papers

Enlarging papers, like negative films, require development, and here things become quite simple. There are several fine all-purpose formulas for developing enlargements in, such as the Eastman D-72, Nepera, Amidol, and a few others which have stood the test of time, but for maximum print quality, the amateur is advised to prepare his paper formula according to the directions which are found in every package of paper. The manufacturers of the paper have made exhaustive experiments



Dupont Superior; Open Air Exhibit, 1/60 to 9.



Dupont Superior; beach scene.

should be used for printing thin, flat negatives; normal papers for normal negatives, and soft papers for heavy, dense negatives.

After the grade of paper has been selected, the surface is a good thing to consider. There are glossy, semi-matte, matte, smooth, crystal stipple, linen, coarse, rough, etc., surfaces to choose from. Here again, the type of negative decides the surface of paper to use.

Commercial prints, prints for newspaper or magazine reproduction, and prints in which every bit of detail must stand out clearly defined, are best made on a glossy surfaced paper, which is later ferrotyped in order to create a hard, glossy finish.

Glossy papers are not indicated for many other types of work, although snapshooters usually order glossy prints from the corner drug store finisher, for their snapshots. Serious workers, however, never consider the glossy paper except for cases such as those mentioned previously.

For all general photographs, a smooth-matte surface is about the best. The fancy surfaces such as linen, etc., are used chiefly as novelties, although in some cases they have their purpose. Pictorial photographs are usually printed on a matte-surfaced paper, while portraits of men, for example, where masculine ruggedness is depicted, usually call for a rough surface. Good taste, it will be seen, governs greatly the selection of enlarging paper.

Glossy papers, incidentally, are to be ignored by the miniature camera worker as a rule, for the hard, glossy finish is not kind to grain, whereas the matte surfaces do a good deal to hide it.

When it comes to brands of papers—that is something that no one would dare suggest, for there are dozens—it seems—enlarging paper manufacturers, and each offers an amazing array of grades, surfaces, and tones. The worker must be left pretty much to himself on this score, but he soon comes to find one or two papers which seem to satisfy him in every respect. Of course, a certain amount of experimenting is necessary to begin with, in order to give a number of papers a fair trial, but after that, the worker should adhere to several papers which most nearly cover the range of his average negatives. In this way, complete satisfaction can always be counted upon.

and tests, and the formula they give for developing their paper is the result of their efforts—in short, it has been found to produce the best results with the particular paper in the package. It would be foolish, therefore, to use any other.

After all is said and done, manufacturers spend a great deal of time and money taking the uncertainty out of photography for the amateur. The trouble is, very few workers deem it necessary to follow the simple directions which are given. If the amateur were to only read carefully and follow the directions furnished by each manufacturer, and this means of not only enlarging papers, but cameras, films, and all other photographic equipment, there would not be half the grief there usually seems to be.

A most interesting and important matter in connection with enlarging might well be mentioned at this point. In the old days, a rising and falling front and swing-back were thought to be absolute necessities. Cameras of modern origin and design lack these movements almost exclusively, excepting conventional view cameras and outfits of similar design. All miniature cameras lack this "refinement," and yet small cameras are exceedingly popular today. One might well ask how it is possible, then, to correct faulty perspective. The answer is in the modern enlarger. It is well known that if the paper easel is tilted under the enlarger lens, true perspective can be obtained in the print. But this is only half the story, because tilting the easel only requires that the enlarger lens diaphragm be closed all the way in order to have sufficient depth to accommodate the entire surface of the paper. Faulty perspective can be corrected without stopping the lens down, not even one stop, *by tilting the negative and the enlarging easel*. In this way they are equalled, and compensate one another. It is predicted that in the future, enlargers will be equipped for both negative and easel tilts. In Europe there is one particular machine called the Correctograph, which just happens to come to mind at the moment. It permits both the negative and the easel to tilt. This enlarger may be the forerunner of a new type of machine.

It is naturally necessary that the enlarging lens be focused as sharply upon the paper as possible. As an aid

in this, various adjustable magnifiers are on the market which attach to the baseboard of the easel. A novel device is known as the Focusing Microscope, and is actually a tiny microscope, below the lens of which is mounted a tiny reflecting mirror. The unit is mounted upon a stand, and the whole unit, in use, is placed upon the easel. The negative in the enlarger is projected upon the easel as if it were about to be focused, and the microscope placed in a suitable position so that a portion of the projected image is caught by the reflecting mirror of the microscope unit. The enlarger lens is then focused until the grain of the negative is brought into sharp focus in the microscope. Greater sharpness cannot possibly be obtained! The lens is now sharply focused, and the microscope is removed, a sheet of enlarging paper placed in the easel, and the print made. A valuable piece of equipment for the amateur who does any amount of enlarging, and wants to get the sharpest possible results in his prints!

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The Author of The Cinematographer's Book of Tables Is At It Again

Here is another table to bind into your Cinematographer's ring book and others are to follow in the December and January International Photographer. This one is entitled, "Camera Speed Increased."

Mr. Westerberg's first book has met with great success and, if you haven't secured your copy, better lose no time calling on or writing your dealer.

It costs only \$1.00 and will help you make better pictures. A dandy Christmas gift for your pal on the job.

CAMERA SPEEDS

CAMERA SPEED INCREASED

RELATIVE EXPOSURE OBTAINED AT INCREASED CAMERA SPEEDS
EXPRESSED IN RELATIVE EXPOSURE AND IN EQUIVALENT F-VALUES

Camera Speed in Pictures Per Second	Relative Exposure Shutter Opening Constant	F-VALUE ACTUALLY USED						Relative Camera Speed	Gear-Box Ratio Required When Cranked at 16
		EQUIVALENT F-VALUES AT VARIOUS CAMERA SPEEDS SHUTTER OPENING CONSTANT							
		11.3	8.0	5.6	4.0	2.8	2.0			1.4
24	100	11.3	8.0	5.6	4.0	2.8	2.0	1.4	1 1/2
32	75	13.1	9.2	6.5	4.6	3.2	2.3	1.6	2
40	60	14.6	10.3	7.3	5.2	3.6	2.6	1.8	2 1/2
48	50	16.0	11.3	8.0	5.6	4.0	2.8	2.0	3
64	38	18.5	13.1	9.2	6.5	4.6	3.2	2 2/3	4
72	33	19.6	13.9	9.8	6.9	4.9	3.4	2.5	4 1/2
80	30	20.6	14.6	10.3	7.3	5.2	3.6	2.6	5
96	25	22.6	16.0	11.3	8.0	5.6	4.0	2.8	6
120	20	25.3	18.0	12.0	9.0	6.3	4.5	3.1	7 1/2
128	19	26.2	18.5	13.1	9.2	6.5	4.6	3.2	8
144	17	27.8	19.6	13.9	9.8	6.9	4.9	3.4	9
160	15	29.2	20.6	14.6	10.3	7.3	5.2	3.6	10
192	12	32.0	22.6	16.0	11.3	8.0	5.6	4.0	12
240	10	36.0	25.3	18.0	12.6	9.0	6.3	4.5	15
256	9.5	37.0	26.2	18.5	13.1	9.2	6.5	4.6	16

Exposure is always a troublesome business in enlarging, for the exposure varies not only with different papers, but also with each new adjustment of the lens diaphragm and magnification of the image. The old reliable method of determining the correct exposure for any given negative without wasting an entire sheet of paper is to cut one sheet of paper in narrow strips, saving them for testing purposes. When a doubtful negative is about to be enlarged, one of these strips is placed on the easel and the image projected upon it, and the approximate time guessed by the worker. On developing the test strip, one quickly sees whether his guess was correct or not, and the next time makes the necessary allowances.

As in critical focusing, there is a special device available which eliminates the test strip method completely. The device is known as the Largodrem, and is an electrical gadget which tells at a glance the correct exposure for any given enlarging paper. And by the way, a table giving the relative speeds of the most popular printing papers may be obtained by writing to Photo Utilities, Inc., 152 West 42nd St., New York City. Such a table has a multitude of uses, and this one is one of the very few published and made available.

Once the correct exposure has been determined, it becomes necessary to count out the seconds during the exposure. One of the Timing Clocks, such as offered by Eastman and others, will be found useful in order to measure the correct timing of the print. If the worker likes automatic devices, there is one for even this task—an electrical device on which a pointer is set to any number of seconds for which the correct exposure calls. A button is pressed, and automatically the enlarger lamp is lighted, and shut off after the exact time interval indicated.

For serious projection printing, a foot peddle is by all means recommended, for by means of it the light is turned on or shut off without the use of the hands. The hands are often needed for careful dodging and manipulation during the exposure, and it is a positive nuisance to have to snap or twist a button to turn the light on or off. Foot peddles are often made to suit the user at home, but they may also be purchased, ready made.

Enlarging, or projection printing, if you will, is a delightful pastime. Equipment can be as simple or elaborate as the worker desires. The manner in which the available equipment is used is what counts, of course, and in this sense, the human element is very much in evidence. Don't envy the maker of salon prints—you can do the same kind of printing if you apply the few simple rules that are suggested. By careful dodging, trimming, shading, etc., masterpieces can be made for form right before your every eyes under the enlarger. But you must be master of your equipment.

In this article only a few of the important considerations have been touched upon. Further details are to be found in books such as "How to Make Good Pictures," "How to Make Enlargements," by Fraprie and Hammond, etc. General hints and suggestions have been scattered through this article, and the keen reader will have picked them up readily enough. I might mention that a number of points mentioned are but little known to average amateurs, and it is hoped that they will be the means of producing better results with the enlarger.

WYCKOFF TO MEXICO

Alvin Wyckoff, ex-president of the International Photographers, Local 659, has gone to the City of Mexico for a sojourn of several months, during which time he will act as chief cinematographer for a Mexican motion picture production corporation. Both Mr. Wyckoff and his employers are to be congratulated upon the new connection.

Proof of PREEMINENCE

THE claims made for Eastman Super-Sensitive "Pan" have been borne out again and again by its contributions to the greatest motion-picture successes. It is actual performance that proves the preëminence of this Eastman film, and that gives it its unrivalled acceptance among cameramen everywhere. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *Super-Sensitive*
Panchromatic Negative

Miniature Camera Photography

By AUGUSTUS WOLFMAN

Converting Roll-Film Cameras to Cine-Film Cameras

IN the August installment of this department a concise description of how to convert a roll-film camera to accommodate cine-film was included, in response to the request of a reader who wished some enlightenment on the subject. I also solicited the aid of readers who have experimented along this line and have received some extremely interesting letters. Miniature camera photography still offers many fields for experimentation and it is safe to say that a great many miniature workers do quite a bit of experimenting whenever time affords, thereby obtaining some interesting material.

As years of progress in science have proven, by exchanging ideas and knowledge gained through experimentation, much more can be realized. This is precisely one of the purposes of this department. Letters from readers, whether containing long stories of successful work, or experimentation in miniature camera photography, or some helpful hints, will always be welcome, and such information will be published in the INTERNATIONAL PHOTOGRAPHER to be passed along to other miniature workers.

To get back to the conversion of cameras, I am including below a letter from Mr. Louis A. Inserra, who has ingeniously converted a ten cent camera into a creditable cine-film miniature, as can be seen from the photographs which he has sent along. To quote Mr. Inserra:

"Photograph No. 1 shows the ten cent camera. It is a No. 3 daylight loading roll-film camera manufactured by Rocamco Products, Inc., Boonton, New Jersey, and can be found in almost any dime store. Being a plastic product, a material similar to bakelite, it is easy to work with. A drill, pen knife, file, or saw, etc., will transform this box to suit your needs. The cheap lens and rubber band shutter can be easily removed, and the required size of lens hole can be cut with a knife. In my case, I attached the whole works on a lathe and turned the opening.

"Various sharp corners and the film gate will need filing. The ruby window can be dispensed with. Photograph No. 3 illustrates the possibilities of converting this camera into a neat little cine-film camera. The film spool is a trifle larger than 35mm., and of course the winding of the film on it and loading it into the camera will necessitate a dark room. The winding knob has a check-pawl action, that is, it turns in one direction only; therefore preventing backward slipping of the film. The film aperture can be masked to suit one's needs. I did not mask mine, for I discovered later that seven perforations would exactly fill the opening; therefore, for each new exposure I turned that many perforations.

"Photograph No. 5 illustrates the method by which I counted the perforations. The device consists of boy's Erector set gear-wheel (12 teeth, each tooth filed down), and the shaft, pointer, and dial face of the alarm time-set of a clock. The hole for the shaft was easily drilled with a 1/16 inch bit. Since the dial face has twelve marked units, every seven numbers turned up a new picture area.

"I constructed the shutter, mount, and optical unit with what material I found in my miscellaneous parts drawer. They are as follows: A Kodak shutter, the shell from a radio earphone, part of a flashlight casing, a portion of a light socket casing, a few bits of flat metal, and a couple of spare lenses.

"Photographs Nos. 2 and 4 illustrate the finished camera. Notice the professional looking lens. I mounted

the shutter onto the camera proper. The earphone shell, containing the threaded section of the cap end of a flashlight permanently fixed with liquid solder, I mounted on the shutter.

"The lenses I mounted permanently in a portion of the rear end (1½-inch length) of the flashlight case; therefore affording me a spiral mount for focusing the lenses. The lens hood consists of a portion of a light socket shell backed up by a ring of bakelite on which I put a white mark at every quarter turn of the lens mount. A piece of metal soldered on the earphone shell and extending forward over the ring of bakelite enabled me to record the focus at different distances. Each mark on this extension constituted a complete rotation of the lens mount.

"As additional improvements, I rigged up a shutter cable release, fixed a finder, and drilled a tripod hole on the bottom of the camera case. This little camera has served me efficiently thus far, and I hope the illustrations clear up any of my descriptions which may seem vague."

I am including below another letter from one of our readers, Mr. Leon Miller, who has experimented with the method I had suggested in the August INTERNATIONAL PHOTOGRAPHER, in which the cine-film is wound around a spool together with a black paper covering taken from a regular roll-film. Mr. Miller informs us as follows:

"I have a Foth-Derby camera and have had access to a supply of short ends. For some time I have been experimenting to discover a practical and convenient method of using this film (cine film) in my camera.

"I first tried the method you have suggested, namely, using the black paper covering to protect the film. After experiencing some difficulty in winding a fresh piece of film on the black paper, I constructed a jig from odds and ends in the shop. I am enclosing a photograph (illustration No. 6) which will show the simple principle involved.

"The winder is made from a portion of a toy mechano or erector set. It is about twelve inches long and is punched at intervals of about half an inch. A crank, from the same source, about four inches long, is filed to fit the slot on one end of the spool. I must call attention to the fact that it is important to align the spool accurately. If this is not done, the black paper will roll up with a



No. 6

series of small tears, which is the result of running too close to one side of the spool.

"Here is a point that is important. When a strip of film is put on the black paper only the end of the film that is wound on the spool first is attached to the paper. If this is not done (if one edge of the film is attached to the paper at a time as described above instead of both at the same time, Ed.) it will be found that the film will buckle and the end will have to be loosened and re-glued.

"Another method I have tried is to fill up both sides of a couple of spools with either strips of paper tape, or blocks of wood. (The width of the regular No. 127 roll-film spool, which fits into the Foth-Derby, is 1 7/8 inches. It is necessary to place paper tape strips, or blocks of wood, etc., of equal size on either end of the spool so that the width of the space left for the film is 35mm. Ed.) Then a length of cine film is wound on the spool (without the black paper). To determine how far to wind the film for each exposure, a small piece of piano wire is attached at the bottom of the spool with a drop of sealing wax. This is bent so that it will hit the perforations on the film and click each time one passes. On the Foth-Derby it takes seven clicks to advance an unexposed section of film.

"In your article you mentioned putting marking lines on both the winding knob and on the body of the camera, for use in winding the film when the black paper is not used. It is obvious that as the spool fills up the circumference becomes greater, therefore fewer turns would be necessary to advance a new portion of film into position. Consequently the system of marks will not work.

"Another thing. If anything but the thinnest sheet of metal is used for a mask on the camera opening, it will put the film farther away from the lens, resulting in each picture being out of focus."

The hints in the above two letters will no doubt be of great help to many miniature camera workers. Any further advice on this subject which readers have to offer will be warmly welcomed.

GOOD NEWS. An interesting bit of news for the small

camera enthusiast is the fact that the Rolleiflex and Rolleicord cameras have been reduced in price. These fine cameras can now be at the disposal of many photographers who have always cherished the idea of possessing one of them, but whose finances have kept them from purchasing either. The Rolleicord, because of its slower lens and cheaper price, should not be belittled. It is equipped with a Zeiss Triotar f:4.5 lens, a speed which is sufficient for most amateur work, and extremely sharp results are produced. The construction is of the same high quality as the Rolleiflex, with the exception that such conveniences as the automatic film transport, the window showing the lens and shutter speeds from above, etc., are omitted.

GOOD NEGATIVE FOR ENLARGING. The title for this discussion is a bit misleading. It should rather be "Good Negatives," for the miniature negative in practically all cases is made with the thought that it is to be subsequently enlarged.

A suitable negative for general enlarging has density in the shadows, detail is discernible, whereas even the strongest highlights do not contain very heavy densities, which appear almost opaque. Such negatives are made by giving an exposure on the full side, and then slightly underdeveloping.

This also results in a finer grain. The longer the film remains in the developer the coarser is the grain produced. No doubt you have noticed in the past that very dense negatives have the tendency to exhibit grain when enlarged, whereas thinner negatives can stand greater enlarging without incurring this detriment. Many successful miniature camera workers recommend this procedure—giving a full exposure and then slightly underdeveloping.

LEICA PHOTOGRAPHY: This interesting little magazine is published by E. Leitz, Inc., and is offered free to all owners of the Leica camera. Though a comparatively recent addition to the ranks of the photographic periodicals, it owes its prominence chiefly to the fact that it deals solely with miniature photography. Thousands of
(Turn to Page 28)

Fred Westerberg, author of that most helpful little book, "The Cinematographer's Book of Tables", announces that in December he will continue the new series of tables to run indefinitely in The International Photographer.

The title of the table for November is "CAMERA SPEEDS," and the table is so printed in the magazine as to be easily removed for filing in your little red book, "The Cinematographer's Book of Tables"—if you have one. If you have not a copy you'd better call on your dealer right away so that you may not fail to have one in your pocket when you need it.

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MOTION PICTURE SOUND RECORDING

(Continued from Page 5)

not sound so very difficult; but if so, that is a wrong impression. It is a very exacting task that requires a high degree of skill on the part of the recording engineer. When it is explained that the duralumin ribbon is only one-half mil thick and six mils wide, something of the difficulty of handling it will be realized.

When a valve is strung, the two ribbon edges that form the sides of the slot must be perfectly parallel and without flaw. Sometimes it is necessary to string a valve three or four times before a ribbon is found that is satisfactory and that will not break when the valve is tuned. Tweezers are used for handling the ribbon; and it is picked up only by the ends to prevent nicking it.

Tuning the Light Valve

After it is strung, a light valve is *tuned* by the aid of a light valve tuning panel. This tuning panel comprises an adjustable audio-frequency oscillator that supplies a tone of predetermined frequency to the light valve, a photo-electric cell, a PEC amplifier, and a valve mounting assembly. The light valve is fastened to an electromagnet on the front of the tuning panel and the ends of the ribbon loop are connected to the output of the oscillator. This electromagnet closely resembles the magnetizing winding of a film recording machine.

A light beam of constant intensity from a lamp in a circular lamp house shines through the light valve onto the sensitive surface of the photo-electric cell, which is mounted in a metal box that shields the cell from all other sources of light. The photo-electric cell is connected to the PEC amplifier, the output of which terminates in a volume indicator very much like the one used in the recording circuit.

With the light valve in place on the tuning panel, the apparatus is switched on. That causes the electromagnet to be energized and a tone of fixed frequency to be generated by the audio oscillator and sent through the strings of the light valve. The audio-frequency tone may be varied over a wide range by means of a calibrated dial and a three-position key switch, the three frequency ranges being marked *A*, *B*, and *C*. Control of the level of the tone applied to the light valve is made possible by an attenuator marked "String Input."

The frequency of the audio-frequency current passing through the light valve strings is adjusted to the value to which it is desired to tune the natural period of vibration of the valve ribbon. A frequency of 8,500 cycles per second is usually chosen for that value—although 7,000 cycles per second was formerly employed—because it places the resonant frequency of the light valve strings well out of the frequency band occupied by tones of the human voice.

With the valve in place on the tuning panel and the oscillator generating a frequency of 8,500 c.p.s., the tension on the loop of ribbon in the light valve is slowly increased by turning the screw attached to the spring that holds the pulley in the center of the ribbon loop. When the tension on the ribbon is great enough to cause

the frequency at which it resonates to be the same as the frequency generated by the audio oscillator, the amplitude of vibration of the ribbon will attain a maximum value and the meter of the volume indicator will indicate highest reading.

An increase or decrease from this resonant value in the tension on the ribbon will cause the reading of the volume indicator meter to decrease. It is at this point of highest meter reading that the valve is properly tuned. The valve is removed from the tuning panel and is ready for use when it resonates at 8,500 cycles per second. But first the calibrated dial of the oscillator is swung over its three ranges to make sure that the valve does not resonate at any other frequency; or if the valve is found to resonate at some other frequency, this check up is to make sure that the second *peak* is very much lower in amplitude than the 8,500 cycle peak. If the minor peak is much over ten per cent of the larger peak, the valve is worthless for recording and must be broken and strung again, unless jarring and retuning will eliminate the second peak.

After the valve is thus tuned to 8,500 cycles per second, it must be examined again under the microscope to make sure that the one mil spacing of the ribbons over the slot has not varied. This spacing must be precise; and the ribbons must have no nicks or imperfections on the edges that form the sides of the light aperture, with the two ribbon sides absolutely parallel.

This is the most delicate portion of the sound recording equipment, and so it must be handled with the greatest of care. When not in use, the light valves are kept in a bell jar (known as a dessicator) that has a chemical in its lower section to absorb all moisture from the air in the jar. This is chiefly to protect the valves from dust in the air. They are always checked on the tuning panel for resonance at 8,500 cycles and for secondary resonant peaks before use; and at the same time they are cleaned to remove any trace of dust that may have accumulated.

The chapter next month will conclude this discussion of film recording. In it the description of the light valve tuning panel will be continued. The theory of the functioning of the light valve and the procedure followed by film recording engineers during shooting will be explained in detail.

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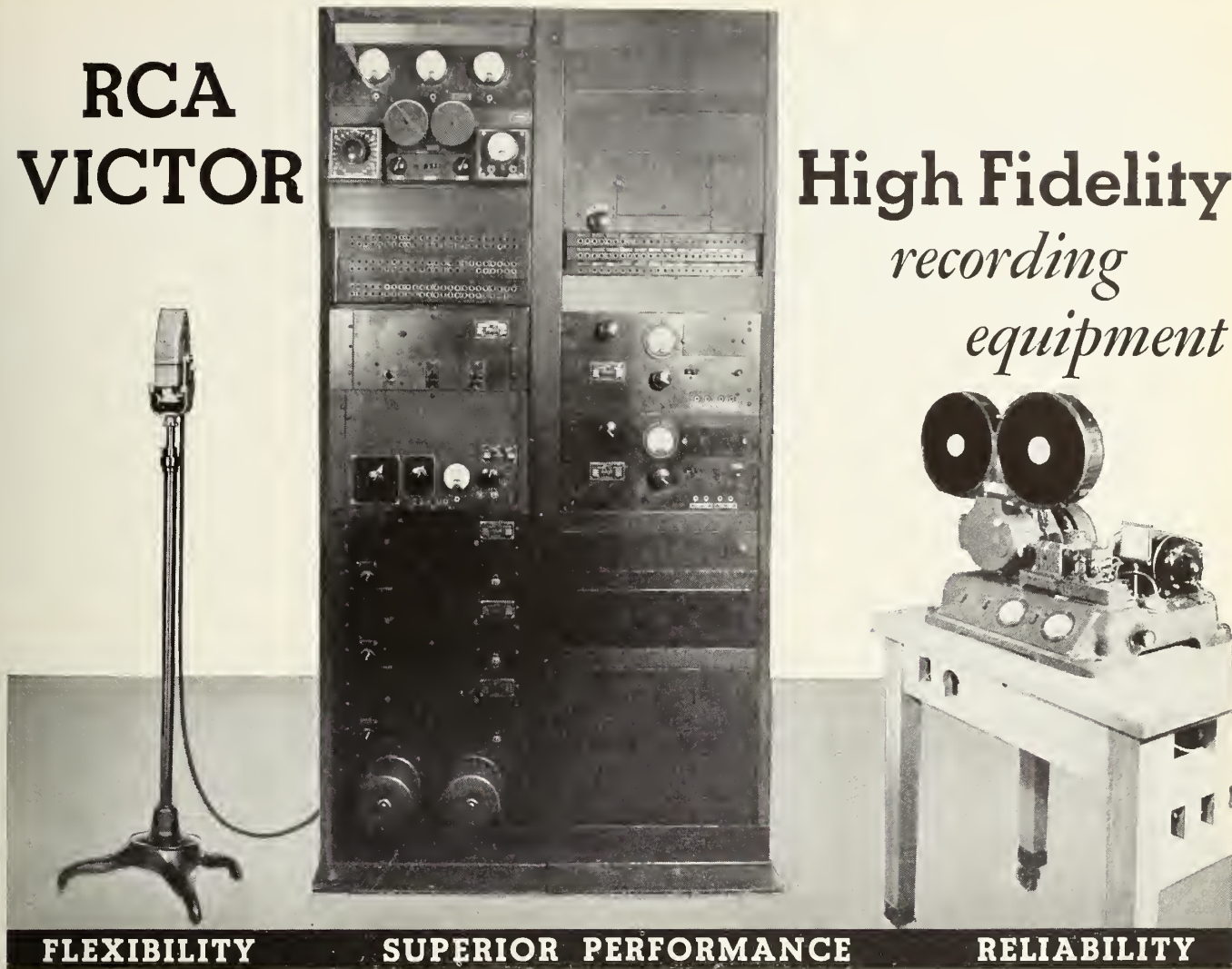
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HOLLYWOOD HONEYMOON

by
R. THRITIS

Synopsis of preceding chapters. (Don't be a goof. This is the first installment.)

CHAPTER I—Ten Nights in a Daze

Lili Liverblossom paced the narrow room like a caged tigress, only she smelled nicer. Of Flamboyant Films, Limited, Lili was the bright particular star. Chiefly particular. Lili was in a funk. It was a blue funk and of all colors blue suited Lili's personality least. Warm shades of brown were fitting, as were various shades of purple. One color, Apoplectic Purple, had been created especially for her. But I digress. I'm color crazy. My chief ambition is to be a vermillionaire.

Lili was in a blue funk. As she paced back and forth she glanced out of the corner of her eye (the large green one) at Perriwether Murgle, to see if he was properly impressed. He was. He was actually subdued.

Perri was Lili Liverblossom's Public Relations Counsel, known to the trade as press agent. Good-looking in a rather butcher-boyish manner, Perri had a mouth that was as flexible as a corset stay, and he stayed around the ladies the same way. It was really he who was responsible for Lili's fame. From the beginning he had seen most of Lili's possibilities and had gotten behind her and literally pushed her into stardom.

But Lili had come to an impasse, although she didn't recognize it by that name. She was beginning to be forgotten around the edges. Flamboyant Films was angling for Olga Bendova, the ravishing Russian rave, to play the sultry lead in their magnificent super-spectable, temporary titled, "Sacred and (censored) Love." That this part should go to another star was unthinkable to Lili. Something had to be done about it, and blamed quick, too. It was up to Perriwether Murgle to do it. Wasn't he her press agent? (Answer next month.)

Lili stopped pacing and looked at Perri. Perri looked at Lili. There they were just looking at each other. Lili broke the silence first. She was pretty clumsy.

"Looka here," she said in her inimitable dialect, a little thing she picked up during her fifteen years in Hasheri, Indiana. "Looka here," she said, I said. "Get t' thinking. That picture starts nex' week. And I gotta have that part. Think up a good publicity stunt."

"The only thing I can think of," said Perri. "Is marriage. That should be good for a bumper crop right now, with the goody-goody campaign on. Think of all the pictures we could take of you in your little home, fixing things up for your loving hubby. It's a wow of an idea," he finished in a burst of enthusiasm.

"But I ain't in love," said Lili dubiously.

"So what? You can fall in love when we need another publicity stunt."

"But I don't want to marry somebody I don't love," said Lili, becoming a little tearful.

"What if I had children? That would ruin my career."

"I can fix that," said Perri breezily.

Lili looked at him slightly askance.

"Don't get me wrong, babe," said Perri.

"What I mean is this. We'll marry you to Hiram von Willeze, the director, and everything will be hunky-dory."

"What makes you think so?"

Perri leaned over and whispered in her ear.

"Oh," said Lili. "You mean like one of those guys they have in harems!"

"Exactly," said Perri. "Perfectly safe, see." He reached down and lifted Lili out of the channel she had worn in the floor pacing back and forth, and set her on the mantelpiece. "I'll be right back. I'm going to talk to von Willeze. He can use a little publicity himself right now and it ought to be jake with him." And with that he swung himself out the window and slid down the drain pipe. Half way down he found out the drain pipe stopped. Someone had stolen the lower half of it. So there was Perri, with no more pipe. Not even a cigar. And there we will leave him.

(What will Perri do? And what will happen to Lili? Can she get down off the mantelpiece? And will she float? I mean on the sea of matrimony. Don't miss the next exciting installment of "Hollywood Honeymoon.")

Late Note from Sue City—

Billie Dove is settling out of court the three damage suits against her for bites inflicted by her dogs on the price-less personages of Ruth Roland and one Mr. R. L. Sapp.

Time was when a gal's hound could take a good healthy chunk out of any visitor, and get a bone for proving he was a good watch dog. Now all he gets is a subpoena.

Upholsterers struck last month for more pay. But it didn't affect the picture business. Mae West has her own upholsterer under personal contract.

After fighting eight years, William Fox finally has received court verdicts establishing him as the owner of the fundamental patents covering talking picture production and reproduction.

So at last we know who is really responsible for the squawks. But we still have to find out why.

THE MACARONI BOWL * * * When Mary Pickford greeted Rudy Vallee on the latter's "Varieties" hour over NBC, she and Rudy spent more time being photographed by newspapers and newsreels than they spent on the air! * * * A drive-in theatre is the newest innovation in Cinemaland. Just park your car in front of the huge screen, sit tight therein, and watch the show. Nobody but your own family can crunch candy in back of your neck. * * * Liberty Magazine's movie reviewer finally ran out of his three-word alliterative column headings, and had to get along with ANTIC, ROMANTIC AND BOMBASTIC. Still ticking, anyhow. * * * Victor Jory was hit in the face by a blast from a pistol in the hands of Preston Foster during rehearsal of a scene for "White Lies." Fred Keating had to jump off the side of a steamer as part of his work in "The Captain Hates the Sea." He can't swim. And Henry Wilcoxon, during the filming of fight scenes for "Cleopatra," was seriously gashed by a saber thrust and went home to recover. Back to work in a few days, he went into more battle scenes—and got carved in the same place! Do you still want to get into pictures? * * *

Recently light earthquake tremors in San Francisco rattled dishes and rang an old ship's bell.

I don't mind the rattle of dishes, as long as the skeletons in my closet are left alone.

But why stop at rattling dishes? The quake ought to create a little good will for a change—and wash them and dry them.

It certainly could do as good a job as any restaurant dishwasher.

The bell-ringing idea was a happy thought. But a little late to do much good.

Maybe the whole thing was just old Mother Nature's way of talking back to Lupe and Johnny Weissmuller.

THE NEW ERA

The Literary Digest informs us that "Taking into themselves the chipper little slogan of 'wholesome, but entertaining,' a group of socially minded individuals have formed in New York an organization which they have characterized as 'The Motion Picture Foundation of America'."

This reform agency will make forty features a year and about the same footage in shorts.

The Rev. Dr. William B. Millar is secretary of the foundation. No actors or actresses will be barred. Even Mae West will be acceptable, the Rev. Dr. Millar intimated, if she "could be cast in something like 'Little Women'."

FAMOUS FINALES

I would like an executive position, Mr. Producer. I'm a personal friend of Upton Sinclair, and I could instruct you in all his policies.

AMAZEMENT DEPARTMENT

Ina Claire, on the august occasion of her thirty-ninth birthday, advised women who felt they were getting old, to buy a new hat and fall in love.

"Get a facial and a new kind of hair dress," advises Miss Claire. "Look over the eligible males and fall in love with one of them."

"You remember the time I eloped with Jack Gilbert?"

"That was my first airplane trip. The whole episode took 15 years off my life."

Drastic measures.

FINGER NAIL REVIEW

(No space left on my thumb nails.)

After 44 days of extra schedule, a hundred thousand feet of film, a hundred attempts to change the perfect title, a score of retakes, a dozen serious and unforeseen pieces of ill luck, and godnose how many muttered imprecations by a harassed cast, "The Captain Hates the Sea" has at last emerged a full fledged gem on Columbia's screen. It truly is just that—Lewis Milestone's production of the book by Wallace Smith is a knockout.

The story is a little sparse of plot, but you're so busy being entertained that you don't notice the deficiency even slightly.

Half the stars in Hollywood are in the cast, it would seem. It is a little difficult to grade the credits, but I think Walter Connolly takes top honors. His portrayal of the dyspeptic sea captain is priceless. Victor McLaglen tags right along in the vicinity with his characterization of Shulte, the "Private Agency." Fred Keating, fresh out of legerdemain onto the screen, handles well his first screen role—a thankless one too—in spite of having had to battle a serious illness all through the production of the picture.

I can't very well tell you the story of "The Cap10 H8s the C," as the only thing that holds the mammoth cast together is the boat they are all on. The picture is just a swarm of laughs caught in a spider-web of plot. See it, and bury your troubles for an evening.

BON MOT FROM THE PRESS:

NEW YORK.—Verree Teasdale . . . arriving in New York to buy a trousseau for her marriage to Adolphe Menjou, said, "Love is more important than clothes."

"I'd wear gingham if it would please him," Miss Teasdale continued.

Verree interesting, indeed. Do you really think it would?

This from a studio production schedule: "MAN PROOF" . . . No one assigned to this.

It seems the wise chap learns by experience.

The city fathers of Canton, China, have banned mixed bathing and mixed dancing. Now they are attempting to enact an ordinance prohibiting mixed walking in public.

A man will probably have to get a permit to wait two hours for his wife on a downtown street corner. And then will have to carry her home in a satchel to get around the mixed walking ordinance.

The next step would be to ban people. Not a bad idea, if you could ban the banners first.

If they don't look out, the venerable graybeards of Canton will be mistaken for a party of lost Philadelphians.

CARD OF THANKS

To Charles Chaplin. Our grateful appreciation for his sustaining our statement issued last month. We stated that he rarely showed any more at places where he was scheduled. So he didn't show up at his own party, where a hundred guests were waiting for him. Our gratitude knows no bounds.

THE GLASS OF FASHION, WITH A DASH OF BITTERS

The Fall Faddists are at it again. As the sport and vacation season draws to a close and the back to nature movement prepares to hibernate for a few months, the fashion experts gird their loins for the joyful work of once more torturing a long suffering public with the latest horrible concoctions dished up in the name of Dame Fashion. Imagination is stretched on a rack to invent what milady will wear, and what milord will do about it.

Word comes from London that the "half-wig" is in vogue. This leaves one side of milady's head in its natural color, covering the other half with whatever tint of hair is wished. I presume it is designed to confuse those men who have definite preferences for blondes or brunettes. An appropriate advertising slogan would be "Half-wigs for Half-wits at Half Price."

Another bubonic brainstorm emanates from the emporium of the eminent Helena Rubinstein, to the effect that milady's face is going to be a riot of color this fall, bursting upon our startled gaze with green face powder, glittering gold and silver eyelashes, eye shadows of blue, blue-green, green, gold, bronze, and silver, with iridescent eyebrows, and vivid, polished lips. That really will be a sight—to make sore eyes. Milady will probably be a good, rich, healthy color in only one place—where she'll get spanked.

DUST LIGHTLY WITH NUTMEG.

THE PHOTOGRAPHER IN HOLLYWOOD DOESN'T PHOTOGRAPH

(Continued from Page 7)

There are an endless number of things he must and must not do in his work. His first concern is to see that the camera is firmly placed so that no movement will result to spoil the shot. The next requisite is to make certain the camera level and the height.

The assistant cameraman, naturally, works out these details with his superior, but the burden of responsibility is upon the Second Cameraman.

Care must be taken to see that the proper exposure is being employed, that the shutter is wide open, that the camera has been "racked over" preparatory to filming the scene.

The Second Cameraman must always have enough film in his camera to complete photographing the scene, for if the scene runs, we shall say, 700 feet in length and there are but 400 feet of film in the camera, criticism no end comes to him who overlooked that important detail.

During rehearsals the greatest lengths are followed to see that the recording microphone is not to interfere with the camera work and that microphone shadows have been eliminated from the scene.

Artistic effects, face and wall shadows and things of that nature are watched carefully by the photographer, but the Second Cameraman quietly checks the work of his boss to see nothing is amiss.

Just before filming starts the motor cable is plugged in, the cry "Roll 'em!" is issued, the switch is thrown and the photographing has started.

Buckles are all right on belts, but they take much of the joy from the life of a Second Cameraman. When he speaks of a "buckle" he says it without a smile, for a film buckle is an interruption in camera operation due to the film becoming jammed. There is always an annoying delay following a film buckle, while the jammed film is laboriously removed and the camera returned to a state of normal operation.

There are many cases in Hollywood of photographers and Second Cameramen remaining associated through the years. The longer the two are together the more proficient they become as a team, quicker and better results naturally accruing. There is no loss of time through ignorance of the other fellow's technique.

George Barnes, well known photographer, had War-



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ren Lynch as his Second Cameraman over a long period of time at Warner Brothers-First National Studios, but that association ended recently when Lynch was raised in rating to Photographer.

Since his promotion Lynch has won plaudits for his photography of the recently completed Joe E. Brown picture, "6 Day Bike Rider," and the air thriller, "Murder in the Clouds."

Until they stopped him operating a camera, though, Lynch didn't have his name on the screen as a photographer.

THE ROLLEIFLEX BOOK

The long awaited English edition of the Rolleiflex Book is now ready for distribution. This book has had an enormous circulation in the German edition, now being in its fifteenth printing, notwithstanding the price in Germany of R. M. 4.00, or about \$1.65. A copy can be procured immediately now from Burleigh Brooks, 127 West 42nd Street, New York City, at the price of \$2.00.

A BABY AT THE BITZERS

The big news (belated) from our New York brothers is that the Old Master, Billy Bitzer, is the father of a bouncing girl. Congratulations!

On Tuesday, October 30, at 3:00 P. M., Exposition Park National Guard Armory, official presentation of commissions by Governor Frank Merriam was made to officers of the California Naval Militia. These men were Gene Hagberg, Geo. Lancaster, James Palmer, Paul Harmer, Earl Theisen and Wm. Thomas. All contributors to this magazine.

MICRO-PAN TRIPOD

The Akers Camera Co.'s Micro-Pan Tripod is now on sale at the Camera Supply Co.'s store, 1515 Cahuenga boulevard, and at Hollywood Camera Exchange Store, 1600 Cahuenga boulevard, Hollywood.

DeVRY TALKIE PROJECTOR WITHOUT MESHED GEARS

The bane of the talkie exhibitor—the meshed gear noises of the projector, has been banished in a brand new type of machine. The silent chain drive takes the place of the meshed gears—and one more big problem retires from the movie world.

This new projector is almost revolutionary. There are *no meshed gears*—not a single one is used throughout the combination sound and motion picture mechanism; and there are no belts, save a double V belt from motor to the mechanism, and these belts may both be changed without even stopping the machine.

A rear barrel shutter is employed which also serves partly as fan for aperture cooling. This rear barrel shutter, plus the correctly placed exact fitting intermittent, guarantees a steadiness of projected picture not possible to any other projector.

But the climax of the equipment is the *silent chain drive*. A new synchronizing framer also makes its appearance.

The intermittent sprocket is in line with aperture and is moved up or down for framing, avoiding the old time framing idler, which could not be kept in synchronization with the shutter timing.

The extreme simplicity of construction prevailing throughout the projector lessens the number of moving parts from 40% to 60% over other theatre projectors, which makes for a great saving in repairs and upkeep.

The projecting and sound mechanism is all built in one integral unit and not patched on as an afterthought as in other theatre equipment. The unit is designed from the ground up for sound and picture reproduction.

There is no outside protruding or exposed mechanism to get dirty and gum up, or to keep clean. The whole machine, including take-up, is completely inclosed within the housing.

It is equipped to accommodate any *light source* and any size lens.



Rolle- iflex

CAMERAS That Think for You

These cameras possess many features in common, such as high speed focusing finder lenses, Parallax compensation, an absolutely rigid focusing mechanism, a one-lever compur shutter for both setting and releasing and patented film guide. They are both precision mirror reflecting cameras and the lower cost of the Rolleicord is due to the elimination of certain refinements which make the Rolleiflex the outstanding camera of the day. These, however, in no way, affect the quality and performance of the Rolleicord.

In both cameras, a high-speed focusing finder lens gives a brilliant image—full film size and right side up—on a ground glass screen, indicating even throughout the exposure, the sharpness you will obtain on your negative and affording you visual evidence of your subject's pictorial qualities. . . . They possess the automatic sharpness of the Reflex camera, the simplicity of the Roll Film, compactness and operating economy of the miniature camera and produces withal pictures that need not be enlarged. Their exclusive features are rigidly protected by patent rights.

Send for your copy of the new, beautifully illustrated and comprehensive Rolleiflex Book—a most worth while and brilliant treatise on photography. **\$2.00**

Send for literature with new reduced prices.

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Rolle- icord



FOR THE AMERICAN FILM INDUSTRY

The New SUPERPAN NEGATIVE FILM



● Agfa Ansco has taken the latest advance step in motion-picture negative film manufacture. It offers the film industry the NEW Superpan Negative.

The Agfa Superpan Negative will be recognized at once for its *super-sensitive speed and finer grain*.

Use of the new film discloses a *wider latitude* in both exposure and development.

A *non-abrasion* over coating protects the emulsion physically. The *anti-halation* coating underlying the emulsion preserves the photographic definition.

High, evenly balanced *color sensitivity* simplifies the problem of correct registration under any lighting conditions, permitting any desired color emphasis with a relatively low multiplying factor for the filter used.

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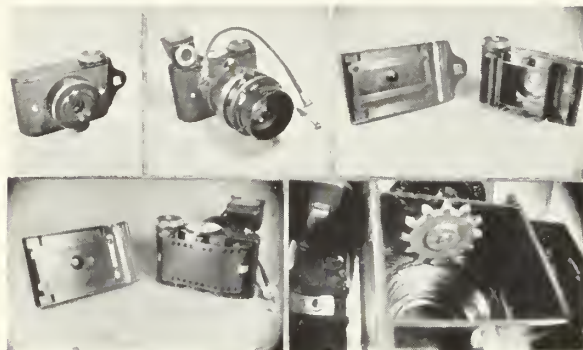
MINIATURE CAMERA PHOTOGRAPHY

(Continued on Page 21)

Leica owners are receiving this magazine monthly, and all owners of the Leica who are not as yet recipients should register their cameras with E. Leitz Inc., which automatically places their name upon the mailing list.

"Leica Photography" is edited by two authorities on miniature camera photography, Willard D. Morgan and Karl A. Barleben, Jr., F.R.P.S., and always contains very helpful material.

NEGATIVE BOXES: Miniature camera photographers employing cine film can obtain an ideal receptacle for storing negative rolls from a drug store. This is the ob-



Top row—1, 2 and 3. Bottom row—4 and 5.

long tin can in which one-half ounce cakes of pure Japanese camphor are packed. Many druggists sell these sold.

cakes separately instead of the entire sealed can, and usually dispose of the latter when the contents have been

Each can will hold from six to eight rolls of negative film (cine type). On the inside of the cover a piece of thick adhesive felt can be attached. The glue on the latter will readily stick to the metal, but for security a thin strip of adhesive can be placed across the center of the felt strip. When the box is filled with negative rolls ready to be stored away, the felt pad is moistened with water and a layer of blotting paper is placed on top of the rolls of film to obviate damage should some water drip from the moist pad, or for any reason the latter should become detached. The cover is then placed on the can and a strip of adhesive run around to seal the cover to the can. The can is then stored away, the film being in a moist atmosphere which will retain its pliability indefinitely.

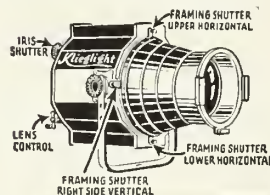
It Costs Less

to light your sets

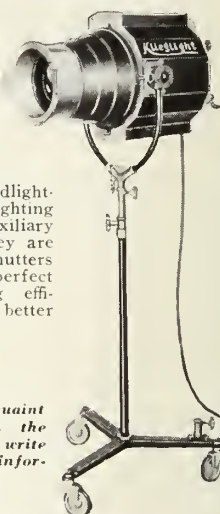
with these

New KLIIEGLIGHTS

In addition to wide-range spot and floodlighting, you can do all kinds of trick lighting with these new Klieglights . . . without auxiliary attachments or any added expense. They are fully equipped with iris and framing shutters and intensity control. Unsurpassed for perfect performance, versatility, and operating efficiency—they offer decided economies and better facilities for studio lighting.



Let us acquaint you with the facts — write for full information.



All these beam shapes can be easily obtained by a simple adjustment of the shutter controls.

KLIEGL BROS

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

321 WEST 50th STREET

NEW YORK, N.Y.

Adhesive felt can be obtained at any drug store. It is supplied in two varieties, thick and thin. The former should be obtained, for its greater thickness allows it to hold more water. One side of the felt contains glue in a dried form, which when moistened sticks to most anything. You may be able to employ this material with whatever container you are using to store your negatives.

NEW LEICA DEVICE: Owners of Leica cameras, models A, C, D and E, can now have the shutter speed flexibility of the F model with the aid of a new precision device just announced. This new gadget fits on the



NEW TYPE FLOOD LIGHTS

For Use With Fotofloods
Extremely Powerful
Flood or Spot

Come in and see them — or write for details.

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Hollywood, Calif.

GLadstone
2404

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shutter release button and allows exposures of 1, $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{8}$ second, which formerly could only be had with the F model.

BROENING RETURNS

Lyman Broening, recently returned from the east after a protracted visit in New York, Baltimore and Washington, announces that Hollywood is a good place to live in no matter what anybody may say about it.

JUST ANOTHER LOCATION

Clyde Elliott, director of "Bring 'Em Back Alive," is in Hollywood preparing an expedition to depart for the Orient, sailing on the Tatsuta Maru, from San Pedro, on November 12.

The expedition will make pictures in China, the Malay Peninsula and Tibet and the title will be "China Roars," an original story by Gordon Rigby.

The personnel of the expedition aside from Mr. Elliott will be Mr. Rigby, Carl Burger, chief cinematographer, member of Local 644, New York, and Robert Miller, of Local 659, second cameraman.

The Western Electric sound equipment will be in charge of Zultan Cagle and it will be the last word in sound engineering. It will be remembered that it was Mr. Cagle who handled the sound on "S. O. S. Iceberg."

It will require eight to nine months to complete "China Roars." Columbia will release.

TRI-ERGO

That astute old lone wolf, William Fox, is again at the top of the motion picture heap through the decision of the U. S. Supreme Court, on October 9, upholding the validity of the American Tri-Ergon Corporation's double print and fly-wheel patents.

The Supreme Court refused to review appeals sought by E.R.P.I. and R.C.A. in behalf of licensees. This establishes the patent infringement claim of Fox against the others, and it is said that settlement in the shape of compromise or sale is in process of negotiation. The figure named has been something less than ten million dollars.

"Electrical Research Products engineers are reported considering adoption of re-recording via the vertical cut system as a means of avoiding any possible infringement upon the double print patent controlled by American Tri-Ergon Corp., headed by William Fox. Under the plan, which is still the subject of intensive study, recording would be first done on discs and then transferred to film. According to engineering opinions in some quarters, this method would avoid conflict with the Fox patents."—*Film Daily*.

CINEMA QUARTERLY

Gets down to Fundamentals.

Critical and constructive articles by the Cinema's Leading Writers and Craftsmen.

Has a pellucid concern with Craftsmanship.

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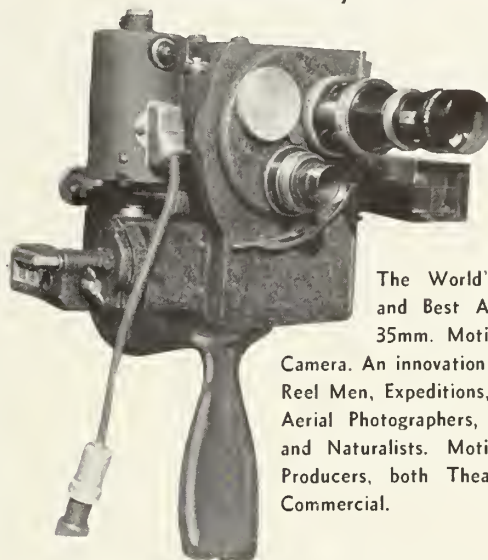
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Featherweight Hand Camera Silenced for
Synchronous Sound
Made in Hollywood



The World's Lightest
and Best All Purpose
35mm. Motion Picture

Camera. An innovation for News-Reel Men, Expeditions, Explorers, Aerial Photographers, Sportsmen and Naturalists. Motion Picture Producers, both Theatrical and Commercial.

The only electrically motor driven hand camera that . . .

1. Weighs less than 15 lbs., complete.
2. Has precision registration pins—insuring absolutely steady screen ride of picture.
3. Is silenced for sound work.
4. Has a brilliant, prismatic, highly magnifying focusing device—wherein the image is read correctly left to right and right side up. Thus enabling the operator to instantly check the actual focus against the reading on the micrometer focusing lens mounts.
5. Enables the purchaser to use the world recognized "Leica" lenses and mounts. The rotary turret is threaded to receive standard "Leica" lenses. This also allows the use of "Leica" sun shades or matboxes and filters.

SPECIFICATIONS

Size—4 $\frac{1}{4}$ " x 5" x 7.

Weight, complete with magazines and "wild" motor—14 lbs., 5 ozs.

Magazine Capacity—200 feet.

Magazines—Exterior type, rubber insulated.

Case—Cast aluminum, machined, black crackle finish.

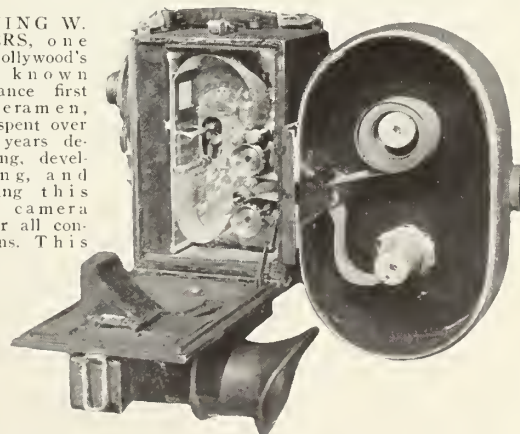
Three lens turret, threaded to receive "LEICA" mounts.

Shutter fixed at 165 degrees.

Registration pins, ground and hardened to fit standard B & H perforations.

Aperture Gate—Ground and lapped to film channel, then chromium plated. There are no pressure plates or pressure upon the film at any time.

IRVING W. AKERS, one of Hollywood's best known freelance first cameramen, has spent over two years designing, developing, and proving this new camera under all conditions. This



camera represents the greatest advance to date, in motion picture camera equipment. In step with the industry.

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HOLLYWOOD, CALIFORNIA

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Brings results—Rates 45 cents per line—minimum charge one dollar per insertion. For Rent—For Sale—Wanted—For Exchange, etc.

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FOR SALE OR RENT—Mitchell and Bell & Howell silenced cameras, follow focus. Pan lenses, free head, corrected new aperture. Akeley, Da Brie, Pathe, Universal, Prevost, Willart, De Vry, Eyemo, Sept, Leica. Motors, printers lighting equipment. Also every variety of 16 mm. and still cameras and projectors. B & H Cameras with old type shuttles silenced, \$150. Everything photographic bought, sold, rented and repaired. Send for our bargain catalogue. Hollywood Camera Exchange, 1600 Cahuenga Blvd. Phone HO. 3651. Cable, Hocamex.

BELL & HOWELL Professional Motion Picture Camera complete with 35—40—50—75 mm. lenses and Mitchell tripod legs. Also Akeley Camera complete with 2 in., 6 in., 17 in. lenses. Mervyn Freeman, 1960 South Vermont Ave., Los Angeles, Calif. Phone: REpublic 3171.

LIKE NEW SOUND MOVIOLA, Model UC, Price \$450; also new H. C. E. Freehead Tripod and legs for Bell & Howell, Eyemo or DeVry cameras—\$75 complete. Hollywood Camera Exchange, 1600 North Cahuenga Blvd., Hollywood.

FOR SALE—CAMERAS AND EQUIPMENT

NEW AND USED HOME MOVIE CAMERAS—DeVry Motion Picture Cameras—sound on film portable projectors with operators for rent. Photographic supplies—fine grain finishing—courteous service. Educational Project-O Film Co., 1611 North Cahuenga, Hollywood.

REAL BARGAINS in 16 and 35 mm. movie equipment and still cameras. Newest types cameras and projectors in all popular makes. Save money on film, lights, lenses and all essential accessories. Our 36 years of experience stands back of every sale. Before you buy, send for our new bargain booklet. Burke & James, Inc., 223 W. Madison St., Chicago.

MITCHELL—Late model silenced camera, fully equipped. Reasonable. Continental Filmcraft, Inc., 1611 Cosmo Street, Hollywood.

LIKE NEW ARTREEVES portable double sound recording outfit, with BELL & HOWELL silenced camera, complete in every detail. A real bargain, price \$3500.00. Price without camera, \$2500.00. Hollywood Camera Exchange, 1600 N. Cahuenga Blvd., Cable Address, HOCAMEX.

FOR SALE—Mitchell tripod friction head—good as new. \$150. Box Z, International Photographer.

MITCHELL STEEL GEAR CAMERA; 3 Astros; Standard Studio Equipment, excellent condition. For quick sale, \$1600 net. Camera Supply Company, Ltd., 1515 North Cahuenga Blvd., Hollywood.

HOLMES 35mm. PROJECTOR—Good condition, \$75.00. Camera Supply Company, Ltd., 1515 North Cahuenga Blvd., Hollywood.

CAMERA REPAIRING

BELL & HOWELL cameras with old type shuttles silenced, \$150. Hollywood Motion Picture Equipment Co., 645 No. Martel Ave., Hollywood.

FOR SALE OR RENT—MISCELLANEOUS

FOR SALE—Inspected and Guaranteed Negative Short Ends—All Kinds. Continental Filmcraft, Inc., 1611 Cosmo Street, Hollywood, Calif.

COMPLETE SET, except two issues, INTERNATIONAL PHOTOGRAPHER last four years. What am I offered? Box GB, International Photographer.

VERY POWERFUL FLOODLIGHTS of new design. Will burn through a 1000 W. Rifle, with Cable—\$5.00. With 12 foot collapsible Stand—\$20.00. Camera Supply Company, 1515 North Cahuenga Blvd., Hollywood, Calif.

MITCHELL MOTOR—1000 ft. Mitchell magazines. J. R. Lockwood, Glendale. Douglas 3361-W.

FOR SALE—75 mm. Cooke Lens. F.2 in Mitchell mount complete. 50 and 75 mm. Astro lenses, mounted and unmounted. J. R. Lockwood, 523 North Orange Street, Glendale. Douglas 3361-W.

BUYERS READ these classified advertisements as you are now doing. If you have something for sale or exchange—advertise it in these columns. THE INTERNATIONAL PHOTOGRAPHER, 1605 No. Cahuenga Ave., Hollywood.

FOR RENT—25 and 35 mm. lenses, motor adapters, Mitchell Standard tripod head, baby tripod, 400 ft. Mitchell magazines. J. R. Lockwood, 523 North Orange St., Glendale, Douglas 3361-W.

FOR RENT—CAMERAS

TWO THOROUGHLY silenced Mitchell cameras. Follow focus device, Pan Astro lenses, Freehead—1000 ft. magazines. J. R. Lockwood, 523 No. Orange St., Glendale. Douglas 3361-W.

THE INTERNATIONAL PROJECTIONIST

THE INTERNATIONAL PROJECTIONIST, a monthly magazine published in the interests of the projectionist. Interesting, instructive. Yearly subscription U. S. and possessions, \$2; foreign countries, \$2.50. James T. Finn Publishing Corp., 1 West 47th St., New York.

WANTED TO BUY

WANTED—Motion Picture and Still Cameras, all types, Lenses, Finders, Tripod Heads, Leica or Contax Cameras. Cash for bargains. Camera Supply Company, 1515 No. Cahuenga Blvd., Hollywood.

WANTED—Mitchell camera silenced. State number and full particulars. Box N, International Photographer.


WANTED—Two Bell & Howell 120° or 170° shutter cameras immediately, for cash. Continental Filmcraft, Inc., 1611 Cosmo Street, Hollywood.

WANTED—New or used 35mm. sound on film recording equipment, single or double system. Give all particulars in first letter. BIRD FILMS LIMITED, Regina, Saskatchewan, Canada.

Please mention The International Photographer when corresponding with advertisers.

**EVERYTHING
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for Professional and Amateur

New and used. Bought, sold
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and manufacturers of the
H.C.E. Combination Lens
Shade and Filter Holder
for any size lens.
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The Last Word

In Sound Recording

**THE NEW PRINCIPLE
MINOR QUARTZ OPTICAL UNIT**

becomes an integral part of your sound recorder—this unit is cemented into a steel block—it focuses a beam of light of great intensity and actinic value a distance away and on the film, which PROVIDES CLEARANCE and PREVENTS SCRATCHING of the sound track. The width of the beam of light measures from .0005" to .0008" as it strikes the moving film.

Send for details and specimen of sound track.

C. C. MINOR

Phone GL. 1030 1619 Cherokee Ave., Hollywood

GARDNER SPORT ROADSTER

1927—has 8 cylinder Lycoming motor. Body is a cream color with dandy rumble seat. There are seven wire wheels and tires (3 mounts) good rubber. Car is in good condition. Private owner. Price \$60.

1830 NORTH GRACE AVE.
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CINEX TESTING MACHINES CINEX POLISHING MACHINES

BARSAM-TOLLAR MECHANICAL WKS.

7239 Santa Monica Blvd.
Phone GRanite 9707 Hollywood, California

POSITION WANTED

DO YOU WANT A CAMERAMAN who is an expert on studio production; or an expedition cameraman who knows every corner of the world; or a cameraman who thoroughly understands the making of industrial pictures; or an expert newsreel photographer; or an expert color cameraman? A limited number of cameramen, backed by years of experience, are available. Write stating your requirements and we shall be glad to assist you in choosing the kind of cameraman you want. INTERNATIONAL PHOTOGRAPHER, 1605 North Cahuenga Ave., Hollywood.

MISCELLANEOUS

COMPLETE COURSE IN FLYING—If interested in aviation, see Roy Klaffki, 1605 North Cahuenga Ave., Hollywood.

WANTED—To know of the whereabouts of motion picture relics, documents, or equipment of a historical nature for Museum purposes. Write Earl Theisen, care of International Photographer, 1605 Cahuenga Ave., Hollywood.

Jimmy Higgins, for three and a half years well known assistant at M-G-M, has joined Chief Cameraman Harry Newman of Liberty Productions and they will begin on November 3, the production of twenty-two units to extend over a period of twelve months. Looks like Jimmy and his boss are going to be busy.

Robert Cline has been signed as first cameraman on the big William Berke western, "Wild Bill Hickok," for Pathe release. Perry Finnerman will assist Cline and Tom Keene will be starred. The Berke organization will produce both a feature and a serial.

Here are a few of the tools offers for **BETTER PICTURES**

ARE YOU GETTING THE MOST FROM THEM?



10,000-watt G-96. Used in 36" sun spots and sky pans. Also as a single powerful light source. About 1/14 size.



5,000-watt G-64. Employs the rugged new bipost construction. Used in 24" sun spots and sky pans. About 1/8 size.



New Bipost 2,000-watt G-48. Used in 18" sun spots and studio condenser spot lamps. Also available in 1,000-watt size. About 1/7 size.



1,500 and 1,000-watt PS-52. Used in rifle lamps, side lamps and strip units. Also for floodlighting. About 1/10 size.



Movieflood. 2,000-watt P-S 52. Brings out blacks and blues. Primarily for color work. Used in regular 1,500-watt units. (15 hour life). About 1/10 size.



1,000-watt T-20. Used in "Lupe" lamps, utility lamps and occasionally in practical lighting fixtures. About 1/10 size.



500-watt T-20. Used in baby spots and in practical lighting fixtures. Also in amateur lighting units. About 1/6 size.



No. 20 and No. 75 Photoflash lamps. For special newspaper effects. No. 75 gives more than 3 times the light of the older No. 20. About 1/8 size.



Photoflood lamp No. 1. Has brilliance of ordinary 750-watt lamp. Used in amateur units and in practical lighting units. (2 hour life). About 1/4 size.



New Photoflood lamp No. 4. 1000-watt PS-35. Has about 4 times effectiveness of Photoflood No. 1. Excellent for close-ups. (10 hour life). About 1/7 size.



200-watt T-10. Used in practical lighting fixtures, such as table lamps and floor lamps. About 1/5 size.



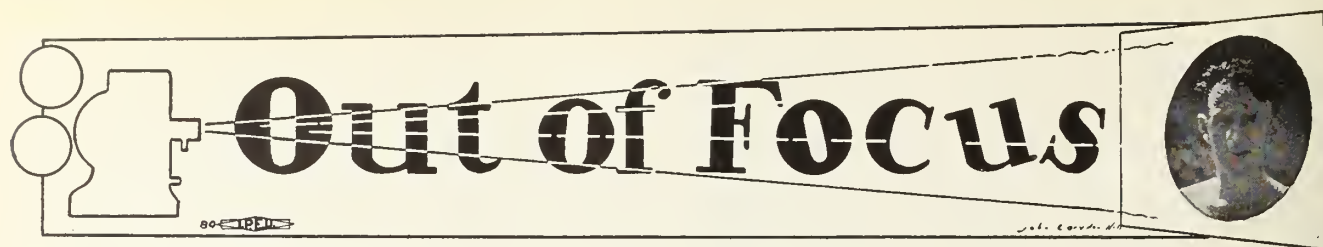
Left: 9A. 9.5V recorder lamp. About 1/6 size. Right 6A. 5V. recorder lamp. About 1/3 size. G-E also makes several other lamps for this work.

THE marvelous, almost phenomenal effects which cinematographers have achieved with lighting are well known.

Working hand in hand with you to help make such results possible, General Electric has made available a great variety of lamps. Are you getting the most use from these lighting tools?

This chart suggests some of the ways in which outstanding cinematographers are putting a few of the many G-E MAZDA lamps to work for them. In the face of this proven flexibility, is it any wonder that studios from coast to coast use G-E MAZDA lamps for all lighting needs? General Electric Company, Nela Park, Cleveland, Ohio.

GENERAL ELECTRIC MAZDA LAMPS



Earl Theisen Pinch-Hitting for Charles P. Boyle (Otto Phocus)

From the R. K. O. Studio comes the announcement that a mile of track has been laid in order to carry the camera for traveling shots. The "dolly" used on this track will follow the principals in filming "West of the Pecos." This is something of a record and may serve to introduce the use of the dramatic device wherein both the action of the story and the narrative dialogue progress simultaneously.

Ordinarily the camera is limited to recording the action of the sets and to short traveling shots made by using a gigantic crane on which the camera is anchored. This of course limits the scope of the camera to the set in such scenes where dialogue must be illustrated by traveling action.

The actor can not say he is going somewhere in a taxi. He must be shown in the taxi delivering the necessary dialogue. Until now it was possible to show traveling auto shots, airplane, train, or boat scenes by process shots, but when the actor had to walk in a park or through a castle, the camera has not been able to follow the action of the players in a long unbroken thought or screen impression.

In the Hal Roach "Babes in Toyland" set 7,000 pounds of nails, 240,000 square feet of wall board, 192,000 pounds of plaster, 1,700 gallons of paint, etc., were used. It required 2,952,000 watts an hour to illuminate this elaborate Mother Goose setting.

What is a stand-in? The stand-in is the person who stands in the set while the technical arrangements are made for the filming of the scene. While the stand-in walks through the set the lights are arranged for proper balance, camera angles, and a few of the other thousand details are organized. This is to permit the star to rest, to study lines, and to generally prepare for the forthcoming shot. All stars must have a stand-in so as to be ready to "sparkle" for the lens. Many, many, persons would like a stand-in with the stand-ins because they are close to the things that be in Hollywood.

Even Joe Penner's duck has a stand-in. Joe's duck, "Goo-Goo," went for the Hollywood atmosphere like a water pond, but the lights beating down on the set gave him the quacks. So while he now wanders around between scenes on the Paramount Studio grass, a wooden duck made by the prop department absorbs the heat of the lights on the sets.

Shirley Temple has a stand-in, too! She is Marilyn and is just about as cute as Shirley. Jake, my pedigreed Swiss Cheese hound, couldn't decide which of the two he liked best. By the way, Jake looks down his nose at the other neighborhood dogs since "Shirley Dear," as she is known on the sets, gave him an ice-cream cone. Not only did she give him the cone, she also broke the cone apart so Jake could get the cream at the bottom. In the meantime Dave Butler, who was filming Shirley in "Bright Eyes," was patiently trying to get the filming done. Until Jake met Shirley he was a one-man dog, now he is a one-man and a girl dog.

The producer-director combination of Jesse L. Lasky and James Cruze, famed a decade ago for such hits as "The Covered Wagon," "Old Ironsides," and other epics has been reunited for the production of another big film. It is "Hellorado," a story of a modern band of travelers marooned in an abandoned California Ghost Town.

Frank Melton, who himself claims to be Studio Pest Number One, has a prominent part in will Rogers' "The County Chairman." It is Melton's boast that: "I've got these producers now so they write in roles for me without my having to pester 'em about it. This, (Melton tells anyone who will listen), is the first role I've ever got without having to stage an annoyance campaign."

I asked Wally Clendenin about things connected with the industry. He told me, but I can't spell the words.

Every time I see a bicycle zip past on the Paramount studio lot I know it is a writer on his way to a distant set to fix a dialogue.

Have you noticed some of the recent Max Fleisher cartoons? Pretty good, eh!

While the film industry has the jitters over the Fox sound patent situation, nothing much will come of it in the sense that the box office will be affected. As far as the box office is concerned only so many dollars can come and go.

I wonder are the "interests" back of the recent clean-up of films satisfied? It is most certain the current films are as harmless as a pink tea party—and just about as entertaining. When the old stand-by theme was taboo the picture makers had to learn some new lessons.

I do not refer to "Peck's Bad Boy."

The best comedies are the newsreel election interviews. Do we audiences have to pay for that? Let us form our own conclusions.

Hollywood is now generally considered the third most important news-center of the United States and one of the ten hottest news centers of the world. Only ten years ago Hollywood was covered by a handful of reporters—now more than 250 columnists cover the film capital daily with dispatches that echo around the world.

One day recently a horse took a bite of Francis Lederer's pectoral epidermis. It is claimed the horse was trying to get a carrot which Lederer was trying to conceal.

It costs only \$1.00 to own a copy of Fred Westerberg's CINEMATOGRAPHER'S BOOK OF TABLES.

Another Scoop

for the CARBON ARC



Batteries of the newly developed silent arc lamps were necessary to film the Ice Cream color fantasy of "Kid Millions," Eddie Cantor's fifth annual screen musical comedy for Samuel Goldwyn. The new three-tone Technicolor process was used for this novel sequence.

—Technicolor Photography by Ray Rennahan — Chief Electrician, Walter Strohm

. . . New standards of photographic speed and quality, as well as new sensations of comfort for the actors on the sound stage, are being created by the NEW Carbon Arc Studio Light.

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VOL. 6
No. 11



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INTERNATIONAL PHOTOGRAPHER

MOTION PICTURE ARTS AND CRAFTS

Vol. 6 HOLLYWOOD, CALIFORNIA, DECEMBER, 1934 No. 11

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A Monthly Publication Dedicated to the Advancement of Cinematography in All Its Branches; Professional and Amateur; Photography; Laboratory and Processing, Film Editing, Sound Recording, Projection, Pictorialists.

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80 I.P.E.U.
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THE ARMED VICTORY

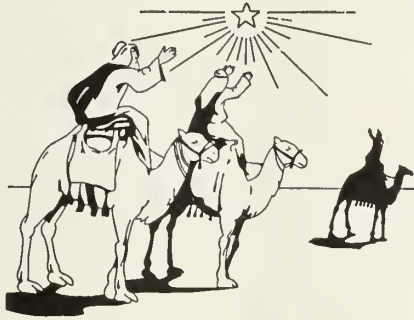


This is the picture of the replica of ARMED LIBERTY, the statue which surmounts the dome of our Capitol, at Washington, D. C. This replica, standing nearly twenty feet high, is a majestic and beautiful figure now on exhibition in the halls of the National Museum at our National Capital. It is not a Goddess of Liberty, but is just what its title proclaims. Note the expression of serenity, power and eternal youth. A small copy of this wonderful statue should grace every home, institution, school and office in the United States, and the writer expects soon to do something about it in the way of asking Congress to appropriate funds to put in circulation small replicas of the Armed Liberty, the profit to go to the orphaned children of the United States.—The Editor.





If the spirit of Christmas isn't all over this gorgeous still we give it up. The deep shadows of the pines, the carpet of sunshine on the snow, the black rocks; the man and boy and sled in the fore-ground, all combine to symbolize the good cheer of the Yuletide season with "Peace on Earth Good Will to Men." The still was shot by Carlton Groat, for the International Photographer, in 1930.



“Abou”

Our Christmas Gift to You Is a Membership Forever in The Tribe of Ben Adhem

Do you remember Leigh Hunt's immortal little poem, “Abou Ben Adhem?” To refresh your memory, here it is and you should learn it by heart if you want to be a good member of the Tribe.

*Abou Ben Adhem (may his tribe increase!)
Awoke one night from a deep dream of peace,
And saw within the moonlight in his room,
Making it rich and like a lily in bloom,
An angel writing in a book of gold;—
Exceeding peace had made Ben Adhem bold,
And to the presence in the room he said:
“What writest thou?”—the vision raised its head
And with a look made of all sweet accord.
Answered, “The name of those who love the Lord.”
“And is mine one,” said Abou. “Nay, not so,”
Replied the angel; Abou spoke more low,
But cheerily still and said, “I pray thee then,
Write me as one that loves his fellow men.”
The angel wrote and vanished; the next night
It came again with a great wakening light
And showed the names whom love of God had blessed,
And lo! Ben Adhem's name led all the rest.*

(Note the line: “Write me as one that loves his fellow men.”)

(Note also the last line: “And lo! Ben Adhem's name led all the rest.”)

If all men were like Ben Adhem the Prince of Peace would abide with us always and every day would be Christmas with peace on earth, good will to men. Seems like an appropriate Christmas token, then, this membership in THE TRIBE OF BEN ADHEM.

Remember, there are no dues, no ceremonies, no meetings, no penalties, no buttons, nothing to give up, nothing to pledge, no obligations to assume save this one only—you agree, like Abou, to love your fellow men.

When you meet somebody you think would make a worthy member of the TRIBE OF BEN ADHEM, salute him or her by touching your head, then your heart and say: “Abou.” Then tell about the Tribe, and that's all there is to it. If we all do that for a year there should be a million members by next Christmas and the whole world should belong by Christmas, 1940.

—The Editor.

“Abou”



The Cobra and the Camera

Our Globe Trotting Brother, Esselle Parichy, Pauses Long Enough in Egypt to Spend Yuletide and to Meet the Serpentine Assassin



This scene depicts the Goddess Isis, wife of Osiris and Mother of Horus, offering the open Lotus and closed Papyrus blossoms, symbols of Upper and Lower Egypt, to Tut-Ankh-Amen seated upon his throne.

In Egypt, when the dying day meets the mantle of the night, it is Amen Ra's most victorious moment. Amen Ra's Barque rides the Arc of the heavens to rise again on a new journey. In this symbol Man finds belief in Eternity:

"I leave you for awhile, but I shall return to you to light your way."

All the gods and demi-gods of ancient Egypt are but peripatetic peregrinators emanating from Amen Ra.

All righteous souls bow in incantations to this Celestial God.

With breath taking potency the sunsets of Luxor screen down from a cloudless sky . . . blood red crashes into crimson at the distant horizon . . . the panorama eye-filling in its terrific harmony and mysterious radiance as the corpse of the night lowers its shroud over the melancholy Nile. The Libyan Hills blot out as they keep the death-watch vigil over the dying day and guard the royal souls incarcerated in the sacrosanct of the Valley of the Kings.

Seated on the open terrace of the luxurious Winter Palace Hotel in Luxor watching one of these inimitable sunsets, a deep tranquil stillness envelopes one. In my melancholy thought I could feel the ancient mood that these moments brought me.

How infinitesimal mere Man feels in the environment of so much antiquity. Time stood still for a terrifying moment as if in the crashing colors of sunset the millennium lamented the Vestal Fires of Creation.

From the very beginning of Time the sun with its terrific pull on Nature brought all things into life for humankind since the cradling of the world, and from this inexhaustible power the ancients drew their religious and political principles.

Like the faithful believers today, the ancient Egyptian knew that he lived in the sight of the Creator, and under the Eternal rays of Amen Ra. Our present code of morals as we know it today differs very little from that of

early Egypt. It can be summed up in two divisions; your duty to God and your duty to your fellow man.

In this Cradle of Civilization you can clearly trace the growth of belief in the resurrection of the dead.

Their hieroglyphs give a complete theory of life after death dating from the beginning of the dynasties. In this ancient faith the deity Osiris gave the Key of Life or the life after death. In the Christian Cross we today see the old sign of Eternal Life which Christ, like Osiris, gave as a symbol of the resurrection.

So when the curtain of Myriad years unfolds before you and you look back upon those ancient people, you find that human nature has changed little since Time Immortal. It is the same today as in the forgotten yester-years . . . faith, love and self respect are indeed the fundamental lures of soul satiety.

To speak of magic in Egypt without mention of reptile holy men is like putting superstition before religion, and to speak of reptile holy men without telling of Moussa would be like a prayer without Mohammed's name.

I have photographed in motion pictures the cobra hunt in the ruins surrounding the Valley of the Kings with Sheik Moussa, the snake charming holy man of Luxor, who is reputed to be the most mysterious of all Egyptians.

The secret of cobra charming is little known in the Western World. Egyptian hieroglyphs chiseled on gleaming temple walls tell of this rite performed by the ancient soothsayers, sorcerers and high priests, but the secret of the performance has never been told.

It has been said that Moussa is a descendant from a long line of holy men. What legerdemain he practices over these deadly reptiles he alone knows together with his ancestral spirits long buried and forgotten in the dust of centuries. Whether it is clever conjury or holy power, charming the cobra whose bite means certain death, the answer is insignificant before the achievement performed; the effect is dramatic, dangerous and impressive, and I can not help but feel there is no trickery in Moussa's ferreting these deadly reptiles from out their hidden haunts.

There must be some strange, magnetic power this holy man possesses other than clever witchery to make him immune to the bite of these poison fangs. My friends have often said: "Oh! he is a fakir; he must draw the fangs and plant his cobras in convenient places. It is a clever show for the gullible tourist." My answer invariably is: "Can you do it?"

Time has not dimmed the picture that remains vividly in focus before me. I can see Moussa now, this imposing son of Mohammed, calling in phonetic intonations mysteriously Arabic . . . calling the cobra to come forth from the hidden places. With his long arms raised toward the heavens I have heard him lament the sacred names of his ancestors, calling back a thousand years. I have heard Moussa's silken incantations reverberate over the silent valley like the sighing caress of the humid breeze through papyrus:

"Marhaba, bisilama, come before the sun, O sacred cobra, come before the sun from your crevice of darkness. Stir from thy dormant stupidity, come forth out of the darkness of the unregenerates. Moussa speaks, Sooliman, my father speaks, my father's father speaks, your



The reptile became languid as though some overpowering lethal influence possessed it.



The melancholy Nile at sunset, from the terrace of the Winter Palace Hotel, Luxor.



Moussa lowering the cobra into the earthen jar after the show.

lords of reptiles speak, whose transmigrated souls have dominion over thee, serpents of the Sahara!"

Striking the ground with a long ebony staff, Moussa punctuates each incantation:

"Come forth venomous evil, thou shalt crawl all the days of thy life and obey Moussa, your mandate of destiny. It is so written in the Book of Life!"

Alert in his task he bade the cobra to come forth from out the ruins, but this evil son of darkness proved rebellious. Moussa turned to me in alarm: "She will not come out! I wil' hav to push in my 'and and git she!"

With studied precision Moussa went about the business of drawing the deadly cobra from the dark aperture. Bringing forth this venomous crawling thing out of hiding required more than fakery or mesmerism. Faith replaced confidence . . . Moussa was on the spot!

I waited with camera ready, expectant, come what would. Soon I was rewarded as Moussa drew the cobra from the hole and flung it briskly over his head . . . his face shown like wrinkled brocade for here was his task well done.

The flexible green bronze body of the cobra glistened in the brilliant sunlight hissing as he was dropped to the ground directly before me. The flat venomous head rose and spread to a hooded cowl. The body swayed menacingly, posed for striking . . . the hypnotic stare of the agate eyes held me in a cataleptic clutch . . . I was being drawn to sudden death, yet was powerless to move when a command from Moussa metamorphosed the swaying menace into a quivering, abject automaton, squirming, rearing and lowering to the charmer's cajoling commands.

"Pick him up and put him around your neck!" I cried, all the while getting the action in the camera.

Moussa chanted low and soft, squatting directly over the cobra. His brown hand touched the reptile. With a deliberate caress he stroked the hooded head, his sinewy fingers moved unhurried. He clasped the snake behind the head and swung it over and around his shoulders.

The reptile became languid as though some overpowering lethal influence possessed it. The closeup was made . . . what a picture!

Presently the spell waned and passed . . . the thing was all snake again, vicious and dangerous.

Moussa lowered the cobra and with head first dropped it into an earthen jar, replaced the top and the show was over.

I could not help but wonder what strange and malevolent power beyond human understanding Moussa brought into play to tame this venomous creature, or is his magic just clever witchery . . . conjury . . . or call it what you may!

On my way back to Luxor I asked Mahmoud, my

dragoman, what was Moussa's secret power over the cobra.

With an oriental mask of remoteness he smiled and said:

"The secret is for the gods and Moussa to tell."

Only his male descendant will know after Moussa is no more. Moussa guards his secret well.

Only Osiris, the weigher of hearts and truths . . . the preserver of magic wisdom . . . the representative of the sun below the horizon, knows."



This scene depicts the Cow-headed Goddess Hathor receiving a gift of Lotus blossoms. Hathor wears the Sun-Disc crown supporting the Maat or ostrich plumes denoting Truth and Justice, and holds the "Key of Life" in her right hand. The bird in the center is a symbol of Hathor and beneath it is an Egyptian conception of the Nile Valley—the half sphere at the top being the source of the river emptying its life-giving waters into the Lotus and Papyrus blooms which represent the Upper and Lower Egypt.

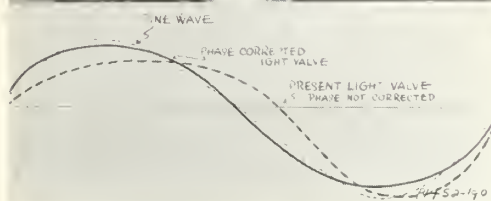
THE CAMERA WILL DECIDE

For the first time in history, this fall spectators and bettors at a race track will have the winners announced to them as the result of irrefutable photographic evidence of both the order and time of finishes. Furthermore, the evidence will be available for their inspection if any question arises.

The innovation is the result of new scientific developments that have brought about the signing of a contract between Charles H. Strub, Vice-President and General Manager of the Los Angeles Turf Club and Electrical Research Products. Under the terms of the contract Electrical Research Products will install and operate a Western Electric Timing System at the Turf Club's Santa Anita track, thirty-five miles out of Los Angeles.

Motion Picture Sound Recording

Chapter XV



The "light valve," that delicate device that makes possible film recording by the Western Electric System. Courtesy Paramount Productions, Inc.

IN the preceding chapter of this series, the constructional features of the *light valve*—the delicate device that makes possible the recording of sound on film by the Western Electric sound recording method—were discussed in considerable detail. The related operations of *stringing* and *tuning* the light valve were also described.

The present chapter continues with the description of the *light valve tuning panel*, that complicated piece of apparatus to which light valves are connected to permit raising the resonant frequency of the metallic ribbon with which they are strung to 8500 cycles per second. That operation was described in Chapter XIV; but the appearance of the tuning panel and the use of the various control on it were not considered in very great detail.

The Light Valve Tuning Panel

Besides the volume indicator meter that was mentioned last month, there is a potentiometer in the volume indicator circuit that likewise is mounted on the tuning panel. This potentiometer allows adjustment of the grid bias voltage applied to the volume indicator tube to the value that provides a five-division reading on the meter scale when there is no a-c. excitation. The a-c. excitation that causes a higher reading of the meter is furnished by the audio oscillator; and it is greatest when the oscillator is tuned to the frequency at which the light valve in place on the tuning panel resonates. This preparatory adjustment of the meter pointer to the five-division mark must always be made before a valve is tuned.

There are a number of other meters and controls mounted on the light valve tuning panel, including rheostats and ammeters in series with the oscillator tube filaments, the PEC amplifier tube filaments, and the sound lamp filament. This sound lamp provides the light of constant intensity that shines between the ribbons of the light valve onto the sensitive surface of the photo-electric cell on the tuning panel.

There are also the two switches that turn on and off the battery supply and the input to the light valve strings. The dial of the frequency control is marked directly in frequencies of cycles per second; and, as was mentioned last month, just below the dial there is a three-position key switch that provides a selector for the three settings that extend the range of the oscillator well above and

below the 8500-cycle frequency to which light valves are tuned.

Inspection of Valves Necessary

After it has been tuned, it is necessary to examine the light valve under a microscope again to determine if there has been any variation throughout the length of the slot in the one mil spacing of the ribbons. If there has been any divergence from this value, it is necessary to readjust the spacing of the ribbons by means of the pincers on the valve, and then to re-check the valve frequency on the tuning panel.

The light valve must also be examined while it is under the microscope for nicks or imperfections in the edges of the ribbons where they form the sides of the slit and to make sure that there are no bits of fuzz or particles of dirt in the slot; for any of those things would cause streaks in the sound track produced by the valve. Specks of dust and dirt can be removed by a fine camel's hair brush; but the only thing that can be done with a valve that has a nicked or irregular ribbon is to break and re-string it with new ribbon.

The slot in the core of the electromagnet must likewise be examined for particles of dust. This is accomplished by placing a small light inside the exposure chamber and observing it through the slot by means of a powerful magnifying glass. The eyepiece of the microscope is usually used for this purpose. The recording lamp has to be removed from its socket to make room for the head of the observer for this examination.

All of the operations described in this section have to be carried out each time a light valve is to be placed in service on a recording machine. If a poor grade of ribbon is encountered when stringing light valves, it is sometimes necessary to re-string and re-tune a light valve as many as a half dozen times before it is satisfactory. Stringing valves is hardly a task for a man lacking in patience.

Theory of the Light Valve

The principle on which the light valve operates is the same principle as that which causes an electro-dynamic (or "dynamic," as it is often called) loud speaker to function; but in the light valve, the loop of duralumin ribbon takes the place of the speech coil and diaphragm of the dynamic speaker.

The speech current from the recording amplifiers is fed to the loop of ribbon in the light valve through a repeat coil, which is necessary to match the 500-ohm output impedance of the bridging amplifier to the four-ohm impedance of the strings in the light valve. The position of the repeat coil (which is nothing more than a step-down audio-frequency transformer, comprising primary and secondary windings of wire on an iron core) with respect to the film recording bridging amplifier and the light valve will be apparent from Figure 1.

When the light valve is fastened in position by the two knurled screws to the electromagnet core of the recording machine, the ribbons of the valve are suspended in a plane that makes a right angle with the plane of the

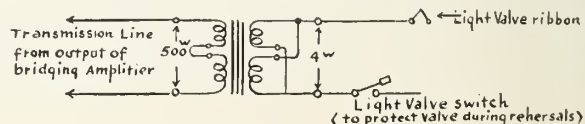


Figure 1. Repeat coil and light valve.

By CHARLES FELSTEAD, *Associate Editor*

electromagnetic field of force produced by the d-c. current flowing through the winding of the electromagnet. As long as sound is not being picked up by the microphones, there is no speech current flowing through the loop of ribbon on the light valves, and so the ribbon has no field of force of its own. (Disregarding the current generated by system noise.)

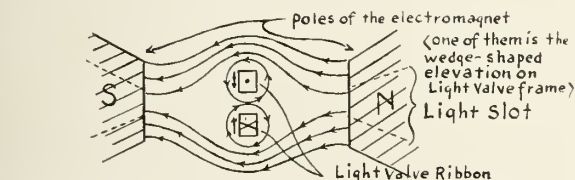
When the light valve ribbon thus had no field of force of its own, the magnetic flux produced by the electromagnet has absolutely no effect on the ribbons because they are of non-magnetic material. But when an a-c. speech current flows through the loop of ribbon, an alternating field of force is set up around the ribbons. On one-half of the a-c. cycle, the field around the ribbons reacts with the field of the electromagnet in such a way that it tends to cause the two sides of the ribbon loop to be brought together; and on the other half of the a-c. cycle, the two fluxes react to cause the sides of the loop to be forced apart.

This action of the ribbons can be explained by applying the law of electromagnetic induction to the reaction of the fields produced by the steady current flowing in the electromagnet winding and the a-c. current flowing in the loop of ribbon. This is illustrated in Figure 2.

Lenz's Law Applied to the Light Valve

The tendency of the lines of force flowing between the two poles of an electromagnet is to assume straight paths from one pole to the other. Faraday thought of these lines of force as acting like stretched rubber bands; that is, they can be bent out of their natural positions, but when the force that is holding them is released they will snap back into position again.

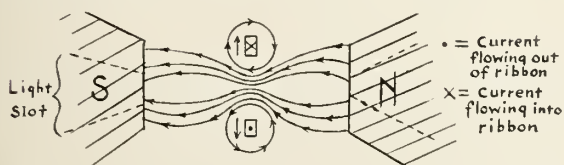
A modification of Lenz's law states that *a wire carrying a current in a magnetic field tends to move in a direction at right angles both to the direction of the field and to the direction of the current*. This is sometimes called the *motor rule*, because it explains the principle on which electric motors function.



A Current flow causes reaction of fields to draw sides of ribbon towards each other on one-half of a-c. speech current cycle

In Figure 2a, the reaction between the field of the ribbons on one-half of the a-c. cycle and the field of the electromagnet causes most of the lines of force from the electromagnet to be bent around the outsides of the two ribbons. In this particular case, the strength of the field of force on the outsides of the ribbons is the sum of the fields of the ribbons and the electromagnet, while the strength of the field between the ribbons is the difference of the two fields.

If we think of the lines of force as acting like stretched



B Current flow on other half of a-c. speech current cycle causes reaction of fields to force sides of ribbon apart

Figure 2. Fields about light valve ribbon.

Instructor in Commercial
Radio at Wiggins Trade
School.



rubber hands, as did Faraday, then we will see that the energy exerted by these lines of force in an effort to assume straight paths between the poles of the electromagnet tends to bring the two ribbons closer together.

In Figure 2b, which represents the magnetic effect produced by the current flow on the other half of the a-c. cycle, exactly the opposite condition exists and the ribbons are forced farther apart by the reacting magnetic fields. In these illustrations, the ribbons are shown in cross-section. The X mark indicates that the current in the ribbons is flowing *into* the page; while the *dot* represents a current flow *out* of the page.

Functioning of the Light Valve

So we see that an a-c. speech current flowing through the ribbon loop of the light valve causes the two sides of the loop to be alternately drawn toward each other and forced apart by the reacting magnetic fields. In an ideal recording system, this movement of the ribbons takes place at the same frequency as the frequency of the a-c. speech current, which in turn has the same frequency as the sounds producing it; and the amplitude of the movement of the ribbons is precisely proportional to the amplitude of the speech current.

This narrowing and widening of the light slit by the movement of the ribbons alternately reduces and increases the amount of light from the recording lamp that falls on the moving film, resulting in narrow and wide exposure bands, or striations, of varying density running transversely of the sound track on the film. This may be seen in the accompanying photographs of strips of sound track of the variable density-fixed area type.

These strips of sound track are of the full 128-mil width produced in the recording machine; and one of them is the record of a tone of constant frequency, such as generated by the audio-frequency oscillator in the light valve tuning panel. The higher the pitch of the sound producing the modulation of the light beam, the narrower and the closer together are the lines of the sound track; the louder the sound, the greater is the contrast in density between adjacent light and dark striae on the film.

Sound Recording Procedure

The operation of a film recording machine during the making of a sound motion picture requires considerable experience and close attention to detail on the part of the recording machine operator, who is often called the film recording engineer.

The various divisions of the studio sound department—stage, monitoring, amplifying, film and wax recording—are connected by a system of colored signal lights and by intercommunicating telephones. These signal lights may be turned on or off by switches mounted beside them in a metal plate set in the wall. Each switch controls the corresponding lights in all the rooms. The telephones are provided for the transmission of more detailed instructions than may be conveyed by the switching on or off of the signal lights.

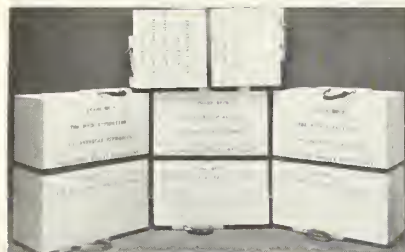
When preparing for the making of a sound "take," the recorder operator *loads* his recording machine with a 1000-foot roll of film; punches the start mark in it; num-

(Turn to Page 25)

The Care of Film in the Tropics

By CARL BERGER, *Local 644, New York*

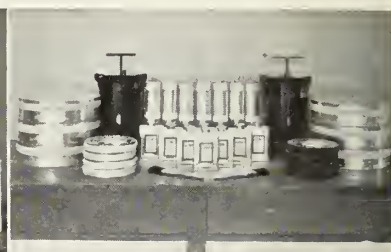
(Written Especially for *The International Photographer*)



50,000 ft. of negative and complete extra tropical equipment ready for shipment. Note screws used in covers to facilitate opening and repacking.



A complete tropical shipment ready to be cased.



Complete extra equipment for a tropical expedition consisting of two dessicators, film packing paper, calcium chloride, tape, lacquer and brushes.

THE care and packing of film for the tropics is one of the most important problems of the cameraman. The results of an entire expedition hinge upon the care exercised before and after exposure of the film.

In all my tropical experience I have never found a better method of packing and shipping film than was used by the Dupont Film Manufacturing Corp. for Frank Buck's "Bring 'em Back Alive," which I had the pleasure of photographing. We left New York on March 27th, 1931, returning December 13th, 1931, exposing over 176,000 feet of negative, and when the exposed negative was developed in New York the laboratory marveled at its excellent condition. Not a single inch of film was spoiled by its exposure to tropical conditions.

The following was the method in which this film was handled. The tape around each individual film can was coated with a good coat of Clear Duco. When dry, these were packed in metal containers holding from 2 to 6 rolls. The containers were then sealed with a metal strip, soft soldered, so that it could be easily pulled off by starting at an extended end. This is done either with a key or a pair of pliers.

After sealing these cans were packed in strong, well constructed wooden cases put together with screws. These cases were zinc lined, soldered, and insulated with celotex. The lids were then screwed down. Heavy rope handles, staggered to facilitate easy handling without swinging, were provided. This precaution prevented the use of hooks which might puncture case and lining and so damage film.

No tropical expedition is complete without extra shipping cases containing several dessicators, a quantity of specially packed calcium chloride, extra rolls of tape in tins, a quantity of black paper, Clear Duco varnish and brushes. As much care should be taken in packing these accessories as the film itself, for they are subject to the same tropical conditions.

The calcium chloride should be packed in individual cans, ready for use, the cans to be taped and coated with Duco and then packed in larger cans each holding 12 to 14 smaller cans. The black paper is best packed 50 sheets to the can, sealed and Ducoed. Be sure to take plenty along as the paper furnished with the film cannot be used over again.

At this point it is advisable to say a few words about the Dupont Dessicator, which is one of the most important adjuncts on any expedition. It is a metal container consisting of a film standard, screen cover for chemicals, film separator, washers, lid and clamp.

In dessicating, first remove tape and cover from can of calcium chloride and place it in bottom of dessicator, being careful not to spill any chemicals. Then place the screen covering over the can. Now mount first exposed roll on the standard and slip washer between it and the next roll. This allows sufficient air space between rolls for chemical action to take place. When sufficient rolls have been loaded on standard, place it carefully in dessicator and clamp lid tightly.

In order to properly dessicate the film it has been found necessary to keep film in dessicator for at least twenty-four hours. Keep dessicator in upright position and see that no one jars it thus causing chemicals to scatter and touch portions of film, as this is likely to spoil portions so touched.

The importance of dessicating negatives is demonstrated by our experience in which, upon removing the dessicated film after 24 hours, we found the calcium chloride almost dissolved, due to its absorption of moisture. At other times the absorption was less, and in some cases the chemical looked as though it was never used. The surprising thing was that we could never tell from the weather, how much, or how little absorption would take place. We did find however that at times the film was so moist that it felt spongy to the touch as we placed it in the dessicator. We then knew we would find at least half a can of water upon opening the dessicator the next day. This applies particularly to unexposed film left in magazines over two days.

In removing can of water or chemicals care should be taken that none be spilled on film, or sides of dessicator. Before using dessicator again be sure it is wiped dry of all chemical dust and moisture.

Immediately after dessicating open one of the cans of black paper and use this in packing film for return voyage. Great care should now be taken to repack the film in the same manner as it was received, using original cans, containers and sealing the cans with tape where the strip was soldered. This should be coated with several coats of Clear Duco. When dry the cans are replaced in the original shipping cases and ready for transportation home.

Before closing it may be mentioned that any film left in magazines for several days before exposing should be dessicated in the same manner, before using.

Careful following of above instruction should pay for any extra trouble taken. To properly care for 6,000 feet per day, it is necessary to devote two to three hours daily for loading, unloading, dessicating and packing. Thus, "an ounce of prevention is worth a pound of cure."

SOMETHING NEW IN NEWSREELS

By RAY FERNSTROM



APPROACHING the end of another year and heading into a new one, it is interesting to watch how the newsreels have changed. New blood has come into them with excellent results. At least one of them has changed surprisingly close to the kind of a reel we predicted here a year ago. Some reels still use but one narrator, but Fox has split its staff into specialists for each kind of coverage. A sports announcer for sports, an aviation editor, a fashion department and so on. This is really a healthy sign in newsreel development, but it does not go far enough in the right direction.

The variety of voices gives novelty to a newsreel but it sometimes slows the tempo when the voices are not fast enough for the action. One of the reasons why Graham MacNamee is still the favorite of many customers lies in the fact that he keeps his speech in synch with the picture at all times. A fast horse race with a slow drawling narrating voice is still not good movie.

In the scramble for new voices with big names it seems to me the best bets have been forgotten, Walter Winchell and Floyd Gibbons. To this observer a perfect setup would include all of these names on the staff of one reel, but naturally this is fantastic. Yet, playing with the idea is pleasant, so forgive me if I go on.

Let's imagine a reel wherein Edwin C. Hill talks on the serious stern pictures of tragedies and great events, historical events of international importance. On hot flash spot news stories that require speed and pep the voice of Walter Winchell. When stories like war stuff and material from distant places Floyd Gibbons, and Graham MacNamee on sports. For explorer subjects my imaginary reel would carry the voice of Lowell Thomas and a lady expert like Peggy Hamilton on subjects pertaining to fashions and material of exclusively



feminine appeal.

As the reader thinks, having possibly read some of this writer's previous efforts, I cannot resist the mention of color in a newsreel. Color rightly has its place in the modern newsreel, and sooner or later it will come, to further enhance the appeal of the rapidly improving newsreel. Take for example fashions—these, practically all newsreel men to whom I have mentioned the idea, agree should be attempted in color, for they are made far enough ahead of release to warrant its use. This is true of many other feature news subjects, that usually lie on library shelves for weeks before use. Most of these would be infinitely more interesting if made in say, Technicolor, with which this writer has had the most experience, and found it practical.

Recently Si Snyder told you about the Junior Newsreel in Technicolor, made especially for kids but with an appeal to adults as well. Although made entirely on the west coast of the United States it proves that a complete reel of six to ten subjects all in color can be definitely attractive on any screen, even though none of its stories are of spot news type. With more men and wider coverage we hope to bring subjects from all over the world to the screen just as the major reels now do in sound and black and white picture.

Before long sound will be shot at the same time we

(Turn to Page 26)



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In Memorium



Another pioneer cameraman passed away at Wilshire Hospital on the night of Monday, November 19, in the person of Henry Gerrard, first cinematographer of R. K. O. Radio.

An operation for appendicitis was the immediate cause of Mr. Gerrard's demise, an ailment superinduced by a wound sustained during service in the Great War.

Deceased was a member of Local 659 and the A. S. C. His last picture was "The Little Minister." He was born January 3, 1899.

Heartfelt sympathy is extended to the bereaved family by his host of friends.

Why Not Let Cameramen Buy the Cameras and Use Them?

Washington Times, Nov. 1, 1934.—Secretary of the Interior, Harold L. Ickes is determined to get into the motion picture business—or at least some of his employes seek to enter him in motion picture production.

The Soil Erosion Administration, of which Ickes is administrator, not to be out-done by other bureaus which are making motion pictures of their activities, went out and bought a couple of motion picture cameras last summer.

Hoping to be up to the minute they purchased sound cameras that had just been placed on the market by a large communications organization that is dabbling in motion pictures.

Equipped with their cameras and several thousand



Herford Tynes Cowling, one of the best known cinematographers in the world, but recently resigned from the Department of the Interior to engage in business for himself.

feet of film, Soil Erosion experts headed for the "field" to make sound recordings, although none seems to know whether soil makes noises when eroding or not.

The boys went after it, however, particularly on Indian reservations in the Far West and around National Parks.

When the films were developed they had some fairly good amateur pictures as a result of their effort. But the sounds were disappointing in that they were few and far between.

Somewhat worried over the situation, one of the soil erosion would-be photographers sought the advice of an expert.

The expert asked:

"Of what did you make sound pictures?"

"Oh, lots of things—including Indians talking their sign language."

He was asked what sound an Indian makes when talking in sign language to which he responded:

"We had an interpreter talk into the mike to interpret the signs."

And that's not all—

Upon investigation it was discovered that the particular "sound cameras"—which the government had bought—were just experimental jobs—none others had been sold—and the engineers of the firm that sold them had not even been able to make them record any sound worth hearing, or that was intelligible if at all audible.

Moral—Imagine a sound picture of the Grand Canyon eroding.

1000-Watt 16mm. Projector Announced By Bell & Howell

The utility of the safe, economical 16mm. film is now extended even further into fields where previously only 35mm. film would give sufficiently large, bright pictures. This furthering of 16mm. film projection applications has been accomplished by Bell & Howell's latest projector, the Filmo 1000-Watt Model 130.

The 1000-watt lamp, instigated by Bell & Howell and developed by cooperation between Bell & Howell and lamp manufacturers' engineers, provides a much more powerful light source than has previously been used in 16mm. projectors. The optical system is entirely new, and is so efficient that, according to tests in the Bell & Howell laboratory, the increase in illumination is considerably greater than that attributable to the increase in lamp wattage. The projection lens is the fast Cooke 2-inch F 1.65.

Naturally the powerful lamp develops considerably more heat than previously used lamps. The lamp is kept at the proper temperature for safe, economical operation by two fans, driven by a powerful motor, which pass a great volume of cool air over the lamps in the large, finned lamphouse.

After passing the aperture, the film travels through a film

conditioning channel where it is cooled and humidified by a blast of air which has been passed over humidifying pads.

Reels arms permit using reels with as much as 1600-foot 16 mm. film capacity—a full hour's show without a stop! The take-up arm carries its own motor which drives the take-up spindle for projection and for speedy power rewinding. Take-up tension is correctly regulated for reel size and for A.C. or D.C. by means of a rheostat, which also permits cutting out all resistance for speedy power rewinding.

The Model 130 may be tilted up or down, for high or low projector positions, by virtue of single handle adjustable legs at front and rear.

A feature which immediately strikes the eye is the low, substantial, "non-tippable" appearance, caused by the low "streamline" base and by the placing of the two reels one behind the other rather than one above the other. This design gives a low center of gravity, very desirable in a large-capacity projector.

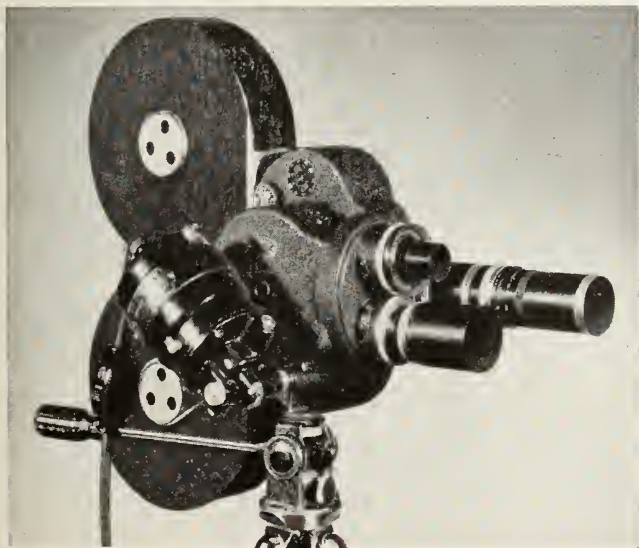
The finish is termed "grey damaskene." It is of a dark silver grey color in crinkle-baked enamel. Fittings are in black and in polished nickel plate.

STAGE LIGHTING EQUIPMENT (KliegEL)

A sixteen-page illustrated booklet, "Bulletin No. 106" featuring all types of photographic studio lighting equipment—including the new ultra-high efficiency Klieglights and several other entirely new units lately placed on the market—has recently been published by their manufacturer. It gives a complete description of the various units, their light control features, their applications, prices, and

other interesting details; also a showing of various optional wiring devices and accessories that are used in conjunction with these lighting units. A number of the units are suitable not only for photographic purposes, but for other lighting applications as well. Copies of the bulletin can be obtained, without charge, by writing to Klieg Bros., 321 West 50th Street, New York, N. Y.

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Miniature Camera Photography

By AUGUSTUS WOLFMAN

The Story of the Enlarger

IN the enlarger, or projection printer as it is termed lately, some expedient must be embodied to insure that the negative is evenly illuminated. The two things usually employed are the diffuser and the condenser.

The diffuser consists of a ground glass, flashed opal glass, or similar material, placed between the light source and the negative. It breaks up and scatters the light coming from the former so that many rays from all directions



Screen picture, taken by R. E. Stichler. Hypersensitized DuPont Superior film was used. Exposure: 1/10 sec. at f:3.5.

light up the negative. This is a great help for negatives which contain small mars for diffused light has the ability of minimizing the tendency of defects, as well as coarse grain in the negative, to show up in the print. Diffused light is also helpful when printing contrasty negatives; it produces soft results.

Quite the reverse the condenser tends to produce brilliant contrasty prints, and also easily shows up mars on the negative, in the print. It usually consists of two lenses each of which is flat on one surface and convex on the other, and in the enlarger they are placed so that their convex surfaces face each other. The size of the complete condenser is governed by the diagonal of the negative, its diameter being slightly larger than the latter. It gathers the rays from the light source and converges them into a cone the apex of which is approximately at the diaphragm of the lens. The condenser is placed in the enlarger close to the negative and in some projection printers it rests on the negative during exposure, acting as a pressure plate.

If a clear lamp were to be used as the light source, its filament would be focused by the condenser into the lens. To overcome this diffusion is employed in conjunction with the condenser. There are also other advantages of this practice. The diffuser will minimize the ability of the condenser to reproduce slight defects on the negative in the print; it will tend to remove the effects of aberrations in the condensing lenses, and also reduces the necessity of the lamp being adjusted every time the lens is racked in or out.

In a condenser enlarger there is usually a screw or other device present by which the lamp can be loosened and moved up or down. When the enlarger is obtained it is best to adjust the light, and once this is accomplished it will be found that it is not necessary to re-adjust the

light unless extreme enlargements are to be made. The diffuser takes a lot of credit of eliminating the necessity of the constant adjustment of the light in a condenser enlarger.

A negative is placed in the latter, and about a three or four times enlargement projected on the easel, upon which a sheet of white paper has been placed. The negative is carefully focused, then removed, and it is observed whether the area on the white sheet is evenly illuminated. If not, the lamp is loosened and moved either up or down until the area projected on the white paper is evenly lighted. The lamp is then secured. No further adjustment will usually be necessary for the ordinary run of enlargements.

Many enlargers employ the flashed opal lamp in combination with the condenser. Others use a sheet of ground glass or flashed opal glass. A great number of miniature camera photographers are turning to the use of the Photoflood lamp, because its intense illumination enables them to use slow contact papers, which are supplied in a greater number of contrasts than bromide paper. Although the usual Photoflood lamp is frosted, it is now possible to obtain these lamps made from opal glass which effectively diffuses this brilliant light source.

There are a large number of reliable miniature enlargers on the market, and most will be found to employ the combination of a condenser with a diffusing medium. One enlarger enables a single and double condenser, and an opal screen to be interchanged. The opal screen together with an opal lamp is used when soft prints are desired; the double condenser is used for contrasty results, and the single condenser and opal screen, are employed for negatives of average density.

The question of the lens on the enlarger sometimes arises in view of the fact that many miniature camera photographers use the lens of their camera on the enlarger. In enlarging a good anastigmat is ideal, to insure a flat field, and the quality of the lenses supplied with high grade miniature cameras cannot be questioned. The objection is sometimes raised to this practice that the continuous use of radiant light, and heat, may have a harmful effect on the cement of the lens. The only advice that can be given on this subject is that if the photographer can afford it he should obtain his enlarger with a separate lens provided for that purpose. At least the high grade expensive lens of the camera will not have to be handled so frequently.

Many miniature camera photographers still have all their printing done by the commercial finisher. It cannot be expected that the best results be produced by the finisher because he first of all cannot give individual treat-

(Turn to Page 24)

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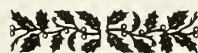
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HOLLYWOOD HONEYMOON

A novel novel of a thousand and one nights in a daze.

by
R. THRITIS

The Characters:

Lili Liverblossom, ravishingly beautiful; the bright particular star of Flamboyant Films, Limited.

Perriwether Murgle, Lili's press agent, and not a little in love with Lili.

Hiram von Willeze, former famous director, now trying to stage a comeback.

That's all we have in the line of characters so far. But don't be discouraged. We'll have this thing looking like a Busby Berkeley ensemble before many chapters have bitten the dust. And it won't be all done with wires and mirrors.

Synopsis of preceding chapters. So little has happened it hardly seems worth while mentioning this. But if you insist, here goes.

Lili is afraid Olga Bendova, Russian actress, will get the screen part she covets, so she tells Perri to work out a publicity stunt to draw attention to her. Perri suggests marriage with von Willeze. He puts Lili on the mantelpiece and leaves by sliding down the drainpipe. Now, grab the handlebars and pedal from here by yourself.

CHAPTER II. Murgle Hangs On.

Sliding down the drain pipe outside the ten-story apartment house where lived the delicious Lili Liverblossom, Murgle was very much disconcerted to find that the drainpipe stopped half way down. Perri followed suit. The next three tricks were his. Then he cautiously laid down the King of Diamonds. It was promptly trumped.

"Bosh," said Perri. "This isn't getting me anywhere." And he was right. All he was getting was tired from hanging onto the pipe. How was he to get out of such a predicament?

Just then the screech of an eagle rent the air. Perri was a little startled to hear an eagle scream in the heart of Hollywood. Then he remembered—it was Saturday.

A spark of hope glimmered in Perri's breast. Fanning it cautiously he soon had a roaring blaze out of it. And with good reason, too. Not for nothing had Perri attained the rank of Eagle in the Boy Scouts! Memories of the old Eagle Call were coming back to him. Could he do it? Could he give the Eagle's mating call? His life hung in the balance!

He cupped both hands to his mouth; faintly at first, then swelling to a tremendous crescendo, the terrible, shrill mating call of the Eagle rang out on the March air.

The last echo had not yet died away before tremendous wings beat the air, and around the corner of the building on two wheels wheeled a huge eagle, the biggest Perri had ever seen.

Perri stopped in the act of whipping up another good screech. The eagle looked at him in amazement, not to mention some rather keen disappointment.

"Sorry, old timer," said Perri contritely, "I didn't mean to dash your hopes, you know."

The eagle hissed a little, but mastered his chagrin and with his chin up started to wheel back around the corner, a tear trembling on his eyelid. After all, eagles are pretty scarce these days. And that screech had held such rosy promises!

"Just a minute, old timer," called out Perri. "I was hoping you would help out a brother Eagle. I'm a little tired of hanging onto this p.p.e. Could you help a pal out with the price of a cup of cof—" He caught himself and smiled sheepishly. "I mean, would you give me a lift to the ground?"

The eagle looked at Perri peevishly. "Don't keep calling me 'old timer,'" he snapped. "I'm really quite young. Just big for my age, that's all." He started to preen a little, but side-slipped slightly and lost altitude. With as much dignity as he could muster he flew back up to Perri's level.

"You are very good-looking, you know," said Perri ingratiatingly. "You have a nice husky build. And your wing-movement is almost a poem of rhythm."

The eagle coughed deprecatingly. "I must get my stomach down, though," he said. "I really don't exercise enough. Life is too simple these days with so many chicken coops around. We eagles used to have to fight for our meals. Now I well remember—"

Perri saw visions of long reminiscence. He felt a nail pull out of the drainpipe braces and realized that something must be done soon.

"If you don't mind my interrupting your story for a minute," said Perri hesitantly, "I'd sort of like to get away from here. One becomes so provincial after a few hours of this. Do you mind transporting me to the ground before we go on with the conversation?"

"I do mind. And I do mind," screamed the eagle, not content to answer both remarks at once. "It's very rude of you to interrupt. And I don't know that I care to carry you to the ground. You're a pretty heavy dish, you know." He cocked his head on one side and eyed Murgle speculatively.

(Will the eagle take pity on Perri? Or will he desert him in his hour of need. And what will happen to Lili—is she still on the mantelpiece? Order next month's issue NOW!)

Mad Hattie thinks a prop man is the guy that holds up the walls on a movie set.

HERE COMES THE GROOM BABY TAKES A BOW

On a theatre marquee:

Thus, modernity!

NRA is now limiting the number of matches that can be given away with the purchase of cigarettes or cigars. No doubt they are also considering discontinuing the dispensation of free toothpicks in public dining rooms. I'm for them. I always did think that the customary dusty toothpick bowl took a little of the polish off a place. I was constantly expecting to come across a restaurant that would ask you to leave your false teeth and have them cleaned free.

Hesitancy

Will never hoist you to the presitancy.

AMAZING CONTRIBUTION TO SOCIAL PROGRESS

A despatch from El Paso states that Mayor Eugenio Prado of Chihuahua City, in an effort to safeguard public morals, has decreed that couples found conversing in parks and other public places after 10 P. M. will have to get married. Police officers have instructions to take such couples to the civil registrar's office for the ceremony.

No excuses go. You can't say you've been up all night trying to pronounce the name of the place.

So if your gal just won't say yes, rush her off to Chihuahua City and spend the evening on a park bench discussing the relative merits of Culbertson and Lenz. Set your watch back an hour and His eminent Excellency the Mayor will do the rest. You can be as surprised as you please.

It doesn't matter if you're under the age of consent. But it counts double against you if you're under the bench.

They ring in children under twelve for half fare.

If they catch a couple already married they're fined for petty larceny. Taking the Mayor's toys away from him.

Grandpao Prado ought to start his little fad in Hollywood. Consider his embarrassment at finding every man sitting on a bench with someone else's wife. His Excellency would have to wrap up his red face, go home and start thinking up another whiz.

Fay Wray is the latest to join in our little game of GEEVASENTENCE.

Problem: GEEVASENTENCE with the word torso.

And Fay says: "Someone dropped a ball on my foot and it made my torso."

!!

LITTLE THOUGHT FOR TODAY: What with NRA, SERA, AAA, CCC, SAPFT, RFC and similar nifties sprouting all over the country, the Christmas turkey this year will probably be found stuffed with alphabet dressing.

Sign in a Hollywood Art Shop window:
BARGAIN SUPREME! ONLY 39c
Framed Picture Prints
VALUES THAT STAND OUT!

Like a sore thumb!

THE MACARONI BOWL—Hot Notes from Palm Springs * * * The El Mirador Hotel, filmdom's favorite desert play spot in the winter time, opened last month. The weather was ideal and masses of fluffy clouds made the place a cameraman's paradise. * * * Kodaked as you went were Nancy Carroll with Howard Hughes of "Hell's Angels" fame, Carl Brisson and his wife, Lola Lane and Al Hall and a bunch of other celebs * * * There was an exhibition of diving and swimming. Eleanor Holm was among those to perform. That girl is a poem of grace in the water. Arthur Jarret was there to cheer her on, even though he is her husband * * * Carl Brisson brought his 16-mm camera along and had his eye up to the finder all through the events * * * After the water show was over, Brisson gave out some pretty nice examples of diving himself * * * Caught Al Hall in the evening explaining how he achieved some of the fine scenes with Shirley Temple in "Little Miss Marker" * * *

The town of Palm Springs is all broken out with an epidemic of rickshaws this year * * * But the boys that pull them walk instead of running like the Chinese coolies * * * And saying "chop-chop" won't make them move any faster * * * They must all be vegetarians * * * Howard Hughes loves to fly over the town doing vertical banks in his plane so he can look down and see what's going on * * * Bebe Daniels and Mrs. Skeets Gallagher established a branch of their Westwood "American Maid" gown shop in the Springs this year and in the way of shops, nothing more interesting and original have I never seen nowhere. It is all designed in the manner of a yacht, and it has to be seen to be appreciated. The final touch is door knobs fashioned like tiller wheels and a real ship's clock that tells thrice at ha' past one and eight times at four, in the approved but mystifying fashion of the sea. The only rub is that if all the customers were like me they'd overlook the merchandise and want to buy the furnishings. * * *

Keep your tin helmets on these days. The annual Community Chest drive is in again, and the blackjacks are out.

Shakespeare said well, through Portia, that "the quality of mercy is not strained."

Silly Sally thinks a "bit" player is one that has been working in dog pictures.

Constance Cummings is returning to America—she is going to star on the legitimate stage on Broadway, where she formerly was a chorus girl. It must be real fun to return as a star to the place where you were once only one of the hired help. But it has its disappointments, too. You may find that all those people whose teeth you've been longing to kick in, have detachable plates.

CALIFORNIA CROAK

Sprinkle, sprinkle, gentle rain,
You give the Chamber of Commerce a pain.

In Tokyo, Police Sergeant Juei Honda's pilot car led Emperor Hirohito and his procession off the prearranged course of travel, causing inconvenience to the Emperor to the extent of twenty minutes delay. Honda attempted suicide by slashing his throat. The Governor and other officials of the State in which the terrible offense occurred, are expected to resign. The National Minister in charge of police affairs may be compelled to vacate his position.

How different from our attitude in this country. But Japan's a pretty small place, and maybe they don't have much time over there.

Hitlerized epigram:

Evil be to him who even thinks.

FAMOUS FINALES

Papa, why does Santa Claus always kiss mama after he gets through filling up the stockings?

The italics . . . are mine!
DUST LIGHTLY WITH NUTMEG.

Recent Photographic Sound Patents

The following patents of interest to readers of *International Photographer* were issued during the past month from the United States Patent Office and have

been compiled by Robert W. Fulwider, patent and trademark attorney, 800 Clem Wilson Building, 5225 Wilshire Boulevard, Los Angeles, California.

1,979,363—Revolving Stage. Busby Berkeley, Beverly Hills, Calif. Assigned to Warner Bros. Pictures, Inc., N. Y.

1,979,397—Photographic Apparatus. Leonard Missonne, Gilly Belgium.

1,979,423—Collapsible Spool for Motion Picture Film. Albert W. Zondreau, Hollywood, Calif. Assigned to Warner Bros. Pictures, Inc.

1,979,700—Automatic Film Threading Motion Picture Machine. Russell P. May, Haddonfield, N. J. Assigned to R. C. A.

1,979,718—Motor Driven Sound & Picture Recording Camera and Reproducer. Walter W. Wehr, Allentown, Pa.

1,979,719—Photographic Camera. Ernst Weisse, Leipzig, Germany.

1,979,800—Motion Picture Projecting Machine. Albert S. Howell, Chicago, Ill. Assigned to Bell & Howell Co., Chicago.

1,979,921—Projecting Apparatus. Albert E. Wier, Brooklyn, N. Y.

1,979,937—Sound Accompaniment for Composite Motion Pictures. Fred W. Jackman, Beverly Hills. Assigned to United Research Corp., Long Island, N. Y.

1,979,984—Motion Picture Camera. Lewis H. Moomaw, Willmette, Ill.

1,980,147—Lens System. Walter G. Wolfe, Greenwood, Mass. Assigned to Wilmot R. Evans, Trustee, Boston.

1,980,167—Change-over Mechanism for Motion Picture Machine. Ivory H. Crabtree, Toppenish, Wash. Three-quarters Assigned to Lottie P. Crabtree.

1,980,196—Electric Discharge Device. Myron S. Gless, East Orange, N. J. Assigned to Bell Tel. Lab., Inc.

1,980,198—Electrooptical Tube. Frank Gray, New York. Assigned to Bell Tel. Lab.

1,980,214—Mount for Electric Devices. Geo. R. Lunn, New York. Assigned to Bell Tel. Lab.

1,980,217—Light Gauging Apparatus. Gabriel Garcia Moreno, Los Angeles. Assigned to Moreno-Snyder Cine Corp., Los Angeles.

1,980,220—Intermittent Feed Device. Edmond R. Morton, New York. Assigned to Bell Tel. Lab.

1,980,223—Light Valve for Translation of Sound Effects. Freeman H. Owens, N. Y. Assigned to Wired Radio, Inc., N. Y.

1,980,285 and 1,980,286—Projection Screen. David F. Newman, Freeport, N. Y. Assigned to Trans-Lux Daylight Picture Screen Corp., N. Y.

1,980,292—Method & Apparatus for producing Musical Sounds. Ralph K. Potter, N. Y. Assigned to A. T. & T. Co., N. Y.

1,980,463—Film Handling Mechanism. Walter L. Wright, Santa Monica, Calif. Assigned to Synchrome Corp., Los Angeles.

1,980,546—Photographic Camera. Wm. H. Petit and Edson S. Hine, Rochester, N. Y. Assigned to Folmer Graflex Corp.

1,980,600—Motion Picture Projection Machine. Geo. K. Spoor, Chicago, Ill. Spoor Natural Vision Corp. Assignee.

1,980,702—Phototube. Bernard Salzberg, N. Y. Assigned to R. C. A.

1,980,795—Method of Photography. James A. Gibbons, North Hollywood, Calif. Assigned to Warner Bros. Pictures, Inc.

1,980,806—Composite Motion Pictures. Hans F. Koenekamp, Venice, Calif. Assigned to Warner Bros. Pictures, Inc.

1,980,915—Motion Picture Camera. Frank X. Graser, Lindenhurst, N. Y.

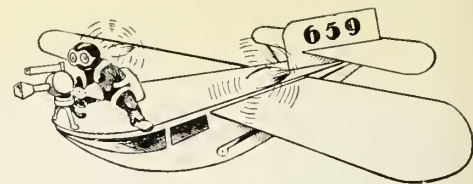
1,980,957—Electro-Acoustic Device. Robert D. Parry, Northway, Neasden, England. Assigned to G. E. Company.

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From Aristotle To Eastman

A Vest Pocket History of Photography—Ideal If You Want to Deliver a Lecture on This Subject Sometime

PROBABLY people were in less of a hurry and patience was less of a virtue back beyond 1850. But Miss Catherine Draper was no less a heroine, therefore, when she posed for the first photograph made in America.

There was no question of "Now hold still, please, just a moment!" Winsome Miss Draper had to remain rigid for ten long minutes while the bright sunlight reflected from her heavily powdered face made an impression on the plate.

But at that time no one thought of photography as very much fun. It was scientific exploration into a new realm of knowledge, with little assurance of the course the future would take. That is why Miss Draper, the first photographer's model in America, merits some of the credit due a pioneer. She hadn't even the satisfaction of knowing that her beauty was going to be perpetuated by the process. But it was. The picture is still in existence and Miss Draper's charm remains.

Back Twelve Centuries

The first American photograph was made by Miss Draper's brother, a professor at New York University. As a photographic experimenter, he was one of a long line of men who contributed to the science of recording light images: a line which has extended all the way from Aristotle's observation of sunlight's effect on the green color of plants down to the minute exactitude of the Kodak Research Laboratories in Rochester, New York, to which are credited such surprising discoveries as that a certain impurity in gelatine, amounting to no more than two or three drops in a ton of the photographic "emulsion" made from gelatine, is vitally important to film sensitivity.

The romantic story more definitely begins with the discovery of silver chloride, a millenium or so after Aristotle. Sixteenth Century alchemists in their search for a means of transmuting base metals into gold observed and recorded that silver nitrate and other silver compounds were sensitive to light.

Two more centuries passed, and the rudimentary science of photography began to leave the stage of fable and guesswork. A German named Schultze experimented in an orderly and scientific manner with this matter of the sensitivity of silver compounds to light; and he actually obtained copies of writing on a sensitive surface of chalk and silver nitrate.

So far this had been slow progress. No one seemed to have any idea how these discoveries could be used, or even that they could be used. But the wonder is rather that such a magical phenomenon as photography ever was evolved at all, rather than that its discovery took so long.

The "Camera Obscura"

In 1802 the progress of photographic invention gained some momentum in the hands of Thomas Wedgwood and Sir Humphrey Davy in England—and the reason was principally the age-old desire to save labor, as will come forth in ensuing paragraphs. Curiously enough, photography and photographic processes are still having that effect today in many industrial and scientific uses.

At this stage it is necessary to refer back to the "camera obscura"—that means "dark room"—which had been

long in existence at the time of Schultze's experimentation. This device with the Latin name was the principal sideshow attraction of its time—a dark room with a lens and prism at the top, through which came rays that cast a vivid picture of the scene outside the room on a table in the middle of the room. Small boys can still make toys illustrating the principle out of a box with a pin-hole. No lens is needed if the hole is small enough.

A similar but smaller arrangement, used to aid artists in drawing, was the forerunner of cameras as we know them—just as Schultze's crude reproduction of writing on light-sensitive material preceded film. The two lines, chemical and optical, came together in 1802, when Wedgwood tried to find a short cut to silhouette making by taking a shadowy camera picture on silver nitrate.

His photographic experimentation was only partly successful, because the silver nitrate he used was not sensitive enough. But his work was taken up by one of the leading British scientists of the day, Sir Humphrey Davy, who got better pictures. Yet even he had to lament at the end of his work: "Nothing but a method of preventing the unshaded parts from being colored by exposure to the day is wanting to render this process as useful as it is elegant." There was still no way to keep the light which made the picture from destroying it afterward.

The problem of "fixing" was not solved until 1839, when Sir John Herschel recommended to Daguerre his own discovery of twenty years earlier, sodium thiosulphate, since familiar to the photographic world as "hypo." Then, at last, pictures stayed as they had been taken.

Daguerre

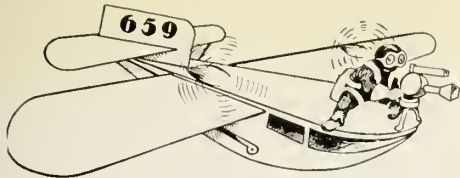
With Daguerre, whose name we know from our grandmothers' quaint portraits, photography began in earnest. Louis Daguerre was a celebrated scene painter, and like many other artists of his day he used a camera obscura for sketching purposes. His reason for experimenting with photography was again the desire to save labor—to catch these camera images photographically rather than have to sketch them by hand. He formed a partnership with Joseph Nicéphore Niepce, another Frenchman, whose interest in photography was to find a method of automatically copying designs upon lithographic stone.

It was a Daguerreotype picture that was taken of Miss Draper; and a few years later every block on lower Broadway—where now the Woolworth building stands—which was then New York's fashionable shopping district, had at least one Daguerreotype shop.

The sensitive surface for Daguerre's photographs was silver darkened by iodine fumes. Light reflected from objects in front of the camera entered the shutter, passed through the lens, struck the sensitive plate, and recorded a "latent image" corresponding to the light and dark areas of the scene in front of the camera. After the plate had been exposed in the camera it was held over a dish of gently warmed mercury.

The mercury vapor clung to the parts of the plate where the light had acted. The silver iodide of the sensitive surface was then dissolved away by "hypo" just as

(Turn to Page 28)



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What Is Photography?

The Power of the Pinhole Camera

By KARL A. BARLEBEN, JR., F.R.P.S.

PHOTOGRAPHY, as everyone knows, is the reproduction of a scene or object produced on paper by means of certain physical and chemical combinations. The camera is the medium used. And the camera is, therefore, of prime importance to everyone who is at all interested in that most marvelous and interesting of processes, photography. However, I somehow feel that entirely too much importance is placed on the camera by many photographers. To them, photography means the ownership of the most expensive camera available. They believe that successful photography is impossible with an inexpensive outfit. The real photographer, on the other hand, loves photography for the results he can secure, the scenes he can reproduce with more or less faithfulness, taking into consideration the medium employed. He is your real photographer, and he doesn't give a hoot what kind of a camera he uses to get results. A few moments on the subject of cameras will not, therefore, come amiss at this point, for practically everything hinges upon this factor.

There is no denying that the finest camera equipment should be had by the photographer. An old reliable rule for the beginner is to the effect that the best camera the purse can stand should be bought. This is very true. On the other hand, the beginner is often misled by such statements, with the result that because he cannot afford a good camera, he foregoes the pleasures photography offers entirely. Little does he realize that a single dollar bill will buy a dandy camera that makes real pictures! True, it doesn't have a fast, or even well-corrected lens. Nor has it great flexibility. Yet it is capable of turning out excellent photographs—if that is what he is after, and that is certainly all that should concern him.

Yes indeed, the lowly box camera, such as the Brownie, is capable of turning out salon pictures—if you know how to use it properly, and that means using it within its limitations. So from that standpoint of whether photography means making pictures or simply owning costly equipment, the latter can certainly be excluded. As a matter of fact, do you know that one of the finest cameras that can be had costs exactly nothing? And has no lens? And no bellows? The pin-hole camera is such an outfit. You can make one yourself in a short while at home with very little trouble. It's only a light-tight box with a holder for the plate or film, and a tiny pin-hole. The pin-hole or "lens" is the most difficult part of the whole thing to make, but even that is easily done. A perfectly round hole is drilled in a very thin sheet of tin-foil or tin. The hole is best made with a very fine needle, for the smaller the hole, the better the "lens." Properly blackened with soot from a candle (paint is apt to clog the tiny hole or at least give it an uneven edge) and the camera is ready for work.

The beauty of such a camera is that diaphragm stops, focal length, and focusing can be entirely forgotten. The lens is truly a "universal focus" affair, for it is in sharp focus for any distance. The focal length can be altered at will by merely increasing or decreasing the distance between the "lens" and the plate or film. You can't do

that with the most expensive camera on the market!

Obviously time-exposures are in order with such a camera. You can't expect to photograph speeding objects with it. But for landscapes and similar inactive subjects, the pin-hole camera is hard to beat, for the "lens" produces a wonderfully pleasing picture; not wire-sharp, yet not out-of-focus. Just a faithful reproduction of the scene, very much like the manner in which the eyes see it in normal vision. Some of the finest salon prints have had their origin in a pin-hole camera!

So it can be seen that expensive equipment is not entirely as necessary as it is claimed to be—but then, in this article I speak not for professionals, whom we admit from the start have certain requirements to fulfill, but for the amateur who enjoys making pictures for the joy of making them. I am trying to point out the fact that while costly cameras are desirable for many reasons, they are not absolutely necessary.

Another factor which plays an important part is the one involving the individual. As I have pointed out previously in an article in this magazine, it is not really the camera that counts so much as it is the man behind the camera. In short, a photographer who really knows "his stuff" can produce masterpieces with a box camera and a single meniscus lens, whereas the inexperienced man will draw only blanks with the most highly developed outfit. Of course one cannot do the impossible, and for that reason the expert uses the finest equipment he can afford. The less expensive cameras limit one tremendously. For example, they require bright sunlight, not too fast action of the subject being photographed, and other considerations. It is in order to overcome these obstacles that the expensive camera is designed—fast, highly corrected lenses, fast shutters, all sorts of flexibility with regard to accessories, etc.

No one should be discouraged at being unable to buy a really good camera at the start. Get a cheap affair, learn to use it within its limits, and you will be surprised what a lot of fun you can get with it. Later, when finances permit, you can blossom forth with a new and higher-priced camera, and at that time your experience with the cheap camera will enable you to better care for and handle the newer higher-priced cameras and their need. I personally have, among others, two of the finest and higher-priced camera, and at that time your experience with the cheap camera will enable you to better care for and these was necessary to the best results in photography. I am fond of both and would be sorely pressed if deprived of them, yet their loss would not by any means sever my picture-making activities. These cameras, and others of a similar type, can do tricks that few other outfits are capable of doing, but when they are used in the usual manner for casual, sunny weather shooting, they cannot easily show their superiority.

The same thing holds true with regard to accessories. The market is full of devices and gadgets, many of which have real merit, but also a good percentage of which can easily be dispensed with. It is no wonder that the beginner becomes bewildered at the wide array in shop win-

dows from which he is to choose. It is surprising how many accessories can be made at home. Necessity is the mother of invention, and as a result the enthusiastic photographer who, unfortunately, is unable to buy much of which he would like, is forced to make his own gadgets. Not only do they serve the purpose, but he gets a big kick from the fact that he has created something. There is a certain satisfaction when a problem is overcome without the aid of bought articles.

So again we come to "what is photography?" Is it the making of pleasing pictures, or the pride of owning shining, gorgeous cameras which are the envy of the other fellow? The chap who makes successful pictures with an inexpensive camera deserves more credit than the one who uses superior equipment. And doesn't the photographer who has to manage somehow with limited equipment get more pleasure than the other who has everything to do with? And not only that, but when difficult problems have to be met and overcome, he who overcomes them becomes the better man in photography, for he is forced to learn many things in order to combat obstacles with limited weapons.

So make pictures for the pleasure of the pictures, not the camera. Don't envy those who have more elaborate cameras—they may not be getting half the fun out of photography that you are with your modest outfit. And while they may be able to do stunts that you couldn't hope to do, just remember that some day you, too, will be in a position to duplicate their efforts with one of those long dreamed of cameras. If you permit your mind to dwell on equipment, you have not the proper spirit for photography, for the real photographer ignores the equipment you use—he finds interest only in what you produce. How you produce it, or with what camera you made the pictures, no one actually cares except possibly out of curiosity. Remember the pin-hole camera. It is quite frequently used, even today, by specialists who are after some particular effect *and cannot get it with any other camera.*

FELSTEAD APPOINTED INSTRUCTOR

Charles Felstead, author of the series on motion picture sound recording and Associate Editor, has been honored by an appointment to the position of Instructor in Commercial Radio at the Frank Wiggins Trade Evening School. He assumed his new duties with the opening of the Fall semester September 18th, and enrolled eighty students from the large waiting list. The course is for trade extension in advanced radio communication, the students being restricted to men who are engaged in that field or in some closely allied work.

A portion of the academic year will be devoted to the study of sound recording in its relation to radio broadcasting, and the chapters he has written for the *International Photographer* will form the structure on which these lectures on recording will be based. The main course is designed primarily to qualify the students to pass the Government examinations for broadcast station and ship radio operators' licenses; but Mr. Felstead will include material on motion picture sound projection as well as sound recording, on public-address systems and on the general subject of electronics.

"HOLLAND IN TULIP TIME"

This picture, shot by Ray Fernstrom, in Holland, for Technicolor, opened at both Loew's State and Chinese, Thanksgiving Day.

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CAMERA SPEEDS

CAMERA SPEED DECREASED

RELATIVE EXPOSURE OBTAINED AT DECREASED CAMERA SPEEDS
WITH SHUTTER CORRECTIONS REQUIRED FOR CONSTANT EXPOSURE TIME

Camera Speed in Pictures Per Second	Relative Exposure Shutter Opening Constant	Shutter Opening Required For Constant Exposure Time	F-VALUE ACTUALLY USED							EQUIVALENT F-VALUES AT VARIOUS CAMERA SPEEDS IF SHUTTER OPENING IS NOT CHANGED						
			16.0	11.3	8.0	5.6	4.0	2.8	2.0	1.4						
			16.0°	11.3°	8.0°	5.6°	4.0°	2.8°	2.0°	1.4°						
24	100	160°	16.0	11.3	8.0	5.6	4.0	2.8	2.0	1.4						
22	110	145°	15.3	10.8	7.6	5.4	3.8	2.7	1.9	1.35						
20	120	133°	14.6	10.3	7.3	5.2	3.6	2.6	1.8	1.3						
18	133	120°	13.8	9.8	6.9	4.9	3.4	2.5	1.7	1.2						
16	150	107°	13.1	9.2	6.5	4.6	3.2	2.3	1.6	1.15						
14	172	93°	12.2	8.6	6.1	4.3	3.0	2.2	1.5	1.1						
12	200	80°	11.3	8.0	5.6	4.0	2.8	2.0	1.4	1.0						
10	240	67°	10.3	7.3	5.2	3.6	2.6	1.8	1.3							
8	300	53°	9.2	6.5	4.6	3.2	2.3	1.6	1.1							
6	400	40°	8.0	5.6	4.0	2.8	2.0	1.4	1.0							
5	480	33°	7.3	5.2	3.6	2.6	1.8	1.3								
4	600	27°	6.5	4.6	3.2	2.3	1.6	1.1								
3	800	20°	5.6	4.0	2.8	2.0	1.4	1.0								
2	1200	14°	4.6	4.0	2.3	1.6	1.1									
1	2400	7°	3.3	2.3	1.6	1.1										

DETERMINING THE SPEED OF LENSES

By E. W. MELSON and S. LAWRENCE
of BAUSCH & LOMB

PART II.

In our previous comparison of the speed of two or more lenses we considered only the variation of one factor at a time, assuming the other factor, either the aperture or the focal length, to be the same in both or all of them. If both aperture and focal length are different, the problem of determining the relative speed becomes somewhat less simple. We consider the variation in volume and intensity of light together—in connection with each other—instead of separately. A certain diaphragm opening admits a certain volume of light. With any variation in diameter of this opening, the volume of light varies directly as the square of the diameter. The light possesses a certain intensity at the diaphragm opening. This intensity is gradually diminished and is proportionate to the square of the distance traveled. As the relative speed ultimately depends on the relative intensity of light action on the plate, and as we cannot directly compare volume and intensity, or quantity and quality, it becomes necessary to have volume represented by intensity, or to estimate the relative intensity of different volumes of the same light at the same point. A certain volume of light represents a certain amount of intensity, initial intensity we may call it, at the point where that volume is estimated. An increase in volume of the same light quite naturally means a corresponding increase in the amount of intensity and vice versa. The initial intensity therefore varies as the volume of light varies, or as the square of the diameter of the aperture. As this intensity is diminished in proportion to the square of the distance, we can without further preliminaries conclude that the ratio of the square of aperture to square of focus denotes the relative ultimate intensity, the relative speed.

For example let us take two lenses of respectively 2 and 4 inches diameter and 6 and 12 inches focus. Their relative initial intensity as based on relative volume of light is as 2×2 and 4×4 , or as 4 and 16. The intensity is diminished in proportion to the square of the focus, or as 36 and 144. Therefore, the relative ultimate intensity,

or relative speed, must be as $\frac{4}{36}$ and $\frac{16}{144}$, or as $\frac{1}{9}$ and $\frac{1}{9}$;

that is, the two lenses have exactly the same speed with those apertures. The fraction denoting the relative ultimate intensity is termed the intensity ratio, or ratio of intensity, and when that is the same for any two or more lenses, their speed is the same.

We can analyze this example independently of those figures. The 12 inch focus lens has twice the diameter of the 6 inch focus lens and consequently transmits four times as much light; but the four times larger volume, after traveling twice the distance, is distributed over a four times larger area, and the ultimate intensity is therefore the same with both lenses.

Further analysis shows that the diameter of aperture

bears the same relation to focus in both of them, or, as generally termed, *both lenses have the same relative aperture*. The ratio of 2 to 6 is as 1 to 3, or $\frac{1}{3}$, and the ratio

of 4 to 12 is as 1 to 3, or $\frac{1}{3}$; that is, the diameter is in both instances equal to one-third of the focal length of the lens. The aperture ratio is $\frac{1}{3}$.

The intensity ratio, as we can plainly see, is the square of the aperture ratio. We therefore conclude that:

1. Speed depends on the aperture ratio, or relative aperture.

2. Speed is proportionate to the square of the aperture ratio.

3. The same aperture ratio, or relative aperture, means the same speed.

Thus, if we know the ratio of the diameter of aperture to focal length, regardless of their actual measurements, it is an easy and simple matter to calculate the relative speed.

Various systems have been devised to express and mark the relative value of certain openings. Of these systems we shall concern ourselves with two only, the focal ratio system and the uniform system.

The focal ratio system is so called because it is based directly on the ratio of aperture to focus. The diameter of the aperture is represented as a fraction of the focal length, as $f/2$, $f/3$, $f/4$, $f/8$, etc., meaning that the diameter of the aperture is $1/2$, $1/3$, $1/4$, $1/8$ and so on, of the focal length of the lens, or that the aperture ratio is $1/2$, $1/3$, $1/4$, and $1/8$. The intensity ratio, or relative intensity—relative speed—as we have previously seen, is the square of the aperture ratio, or $1/4$, $1/9$, $1/16$, $1/64$, etc. Exposure time being in inverse proportion to speed, relative exposure must be as 4, 9, 16, 64, etc.

Thus the fractional diameter gives directly, or indirectly, aperture ratio, relative speed and relative exposure. The ratio number 2, 3, 4, 8, etc., as denominator, with one as numerator, gives the aperture ratio; and the square of the aperture ratio gives the relative intensity or relative speed—and inversely the relative exposure. The following table will help make this clear:

Fraction diameter.....	$f/2$	$f/3$	$f/4$	$f/8$	etc.
Aperture ratio.....	$1/2$	$1/3$	$1/4$	$1/8$	etc.
Intensity ratio, or					
Relative intensity	$1/4$	$1/9$	$1/16$	$1/64$	etc.
Relative exposure	4	9	16	64	etc.

The intensity, or speed, being in direct proportion to the square of the aperture ratio, the speed value of any two openings can thus be easily compared. The speed of $f/2$ and $f/4$ for instance, is proportionate to $1/4$ and $1/16$ respectively. But *these fractions compare inversely as their denominators*, and the denominators are the squares of the ratio numbers; consequently *the speed is in inverse proportion to the squares of the ratio numbers*. Thus the speed of $f/2$ compares with the speed of $f/4$ inversely as the square of 2 compares with the square of 4, that is, inversely as 4 and 16, or directly as 16 and 4, or as 4 and 1.

Exposure time being in inverse proportion to speed (the more speed, the less exposure, and vice versa), it follows that *exposures are directly as the squares of the ratio numbers*.

It is needless to say that the *same ratio number* means

the same relative aperture, and consequently the same speed and the same exposure time with all lenses.

Depth of focus being in inverse proportion to diameter of aperture and therefore directly proportionate to the ratio number, it follows that, 1—With the same lens, or with several lenses of the same focal length, depth of focus with the various apertures is directly proportionate to the ratio numbers. 2—With the same ratio number (relative aperture) and the same focal length, depth of focus as well as speed is the same.

The apertures which are marked have been so chosen that each succeeding smaller one has one-half the area of the preceeding larger one, and consequently requires double the exposure.

Beginning with $f/1$, an aperture, the diameter of which is equal to the focal length of the lens, the series of apertures will be as follows: $f/1$, $f/1.41$, $f/2$, $f/2.83$, $f/4$, $f/5.6$, $f/8$, $f/11.3$, $f/16$, $f/22.6$, $f/32$, $f/45.25$, $f/64$, $f/90.5$.

The Uniform System (U. S.) is based on the focal ratio system as shown in the following table, and the aperture numbers give directly the relative exposures:

Relative Aperture—							
$f/4$	$f/5.6$	$f/8$	$f/11.3$	$f/16$	$f/22.6$	$f/32$	
U. S. No. 1	2	4	8	16	32	64	
			$f/45.25$	$f/64$	$f/90.5$		
U. S. No.			128	256	512		

An aperture of $f/4$ is here taken as requiring a unit exposure and is marked 1. The next smaller opening, $f/5.6$, requiring double the exposure of $f/4$, is marked 2; the next one, $f/8$, requiring double the exposure of $f/5.6$ and four times the exposure of $f/4$, is marked 4, and so on. The numbers 1, 2, 4, etc., thus have reference only to the comparative exposures, and the exposures read directly as those numbers. If No. 1 requires 1 second, No. 16 requires 16 seconds. If No. 8 requires 3 seconds, No. 32 requires 12 seconds. If No. 128 requires 2 seconds, No. 16 requires $1/4$ second, and so on.

The necessity for faster lenses has been recognized for more than sixty years. It was not until 1881 that Dr.

Schott and Prof. Abbe discovered that it was possible to produce a glass with a refractive index as high as heavy flint, but with no more dispersion than ordinary crown glass. And it was from such glass that the first anastigmat was made in 1890. This lens had astigmatic correction over a large flat field and at the same time spherical correction for a large opening.

Cinematography, of course, brought an even more intense need for faster lenses. It was for this reason that Bausch & Lomb began certain experiments in 1925, under the direction of Dr. W. B. Rayton, to develop a new glass for a new lens capable of giving the best possible definition over the entire area of the picture with the highest speed consistent with a reasonable depth of focus. The speed adopted, $f/2.3$, has become more or less standardized as the best compromise between illumination and depth of focus. The definition and covering power of the new Raytar lens, however, is comparable with the results obtainable heretofore only with much slower lenses. This characteristic makes the lens a very flexible tool in the hands of a skilled operator. He can make pictures as sharp as he likes or he can introduce whatever degree of diffusion he prefers.

Contrary to all precedent, the various focal lengths are not geometrically similar. Motion picture photography differs from ordinary photography in that regardless of the focal length of the lens used, the picture area is constant in size so that the angular field of view decreases progressively as the focal length is increased. Taking advantage of this fact, simpler constructions have been introduced in the longer focal lengths of the Raytar, gaining thereby a very desirable reduction in weight. For instance, the simplification of construction in the case of the 152 m/m focus lens is such as to justify reducing the relative aperture to $f/2.7$ whereby we gain a significant reduction in bulk. The lens is fully corrected and will perform equally well with arc or incandescent illumination, and with orthochromatic, panchromatic or high speed film, taking equally sharp pictures of any color or color combinations.

OUR CAMERAMAN IN LITTLE AMERICA RADIOS US MACKAY RADIO RADIOGRAM

November 21, 1934.

Byrd Expedition Little America
via San Francisco, California.

Herbert Aller,
International Photographers, Local 659,
Hollywood, California.

Would appreciate you insert following in December number International Photographer if in time stop. Sincerely wish every member of the International Alliance a very Merry Christmas and Prosperous New Year. Sorry am unable to send individual radios. Kindest regards.

JOHN L. HERRMANN, Local 659.

Mr. Aller replied to this and Mr. Herrmann answered as follows:

Many thanks your radio stop summer with us again temperature around zero almost too warm for comfort stop have been running the Paramount Penguin Theatre for past year using Western Electric Sound Projector and our two snow vaults contained ninety-seven programs stop have run pictures from one to five times each; musicals have greatest number of runs stop hope to see you and the boys next year best wishes.

JOHN L. HERRMANN.

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Sound For The Amateur 16mm.

By WALTER BLUEMEL

WITH the universal adaptation of sound pictures in theatres during the past five years, the amateur has no doubt felt the lack of sound in his pictures and has wished many times that he could add sound and dialogue to them.

With no silent professional films to use as a model for his silent pictures he has many times been at a loss as to putting over certain scenes silently, for silent and sound technique are undoubtedly different.

This puts the average amateur at a decided disadvantage and often makes it necessary for him to clutter up his picture with titles of unnaturally exaggerated gestures on the part of his characters to make his scenes clear, with the total result that his pictures are sadly amateurish.

That sound, whether it be music, incidental sounds, explanatory dialogue or the actual dialogue of the characters, is an advantage to any picture cannot be denied. The illusion cannot be complete when sound is lacking where one is accustomed to hearing sound. When the sense of hearing is not occupied along with the sense of sight, the two become divided and attention to the picture is incomplete.

The ear picks up all stray sounds and when these are not in harmony with the picture the spectator's attention to the picture suffers. It is like reading a book while someone is talking in the same room. It can be done, but only with considerable concentration and when the book lags in interest attention is unconsciously transferred to hearing and the reader reads on without knowing what he is reading.

In the case of silent pictures the spectator picks up all incidental noises, and when these noises assume interest, such as the comments of other spectators about the picture, the attention can be kept wholly on the picture only with effort, unless the picture be of extreme interest. It is for this reason that theatres have furnished music with silent films almost since the beginning of entertainment pictures.

Music, especially when it expresses the mood of the picture, occupies the ear in harmony with the picture. One might think that this would tend to draw attention from the picture to the music, but this is not the case because the sense of sight leaves a stronger impression than the other senses, and hearing, therefore, is subordinated to sight. The picture is enhanced by the music, rather than the music by the picture.

Even in sound and dialogue pictures the visual will, and should, always leave a stronger impression than the auditory. It is much easier to remember what the characters did than what they said. The amateur must keep in mind that the motion picture is essentially a visual medium, and as such sound is by no means indispensable.

The amateur who has no sound available, therefore, need not despair but should, instead, try to overcome its absence by making his pictures pictorially interesting. The ingenious amateur need not stop here, however, for there are many ways in which he can also add sound

to his pictures.

I do not intend, just here, to discuss sound for the amateur in so far as doing his own recording on film is concerned, but rather to suggest ways in which he can cheaply and efficiently overcome the lack of sound felt in his pictures today.

Sound-on-film recording has, of course, a definite commercial value, but as yet not for the home movie maker, who can neither, for reasons given, successfully and cheaply make his own sound pictures, or secure enough ready made sound pictures to warrant the purchase of a sound-on-film projector and reproducer. On the other hand I certainly would not advocate the purchase of synchronous disc recording and reproducing equipment, for this type of equipment has been proven unsatisfactory, and has been discarded from commercial use.

There remains, however, several simple ways in which the amateur can add sound to his silent pictures. He must, necessarily, limit himself to accompanying music and dialogue, rather than to sounds and dialogue actually produced by the things or persons in the picture, but even with this limitation much can be done to improve his silent pictures with sound.

Perfect synchronization is possible only with sound-on-film or synchronous disc recording, but there are many instances in which perfect synchronization is not necessary, and in these instances a number of means for adding music and dialogue to a silent picture are available. The simplest of these is, of course, the phonograph.

It is surprising how much the simple musical accompaniment of a phonograph will add to a silent picture. With the proper choice of records much the same effect can be obtained as that of the organ or orchestral accompaniment in theatres before the coming of sound. The records should also be limited to organ and, preferably, concert orchestra selections, except in rare cases where voice or a single instrument are better fitted to the scene it accompanies.

Symphony music is especially suited to the motion picture, for it has, or can have, depending on the picture, much the same characterization, one affecting the ear as the other affects the eye. Each can produce the same moods, the same variations in the emotions, so that together one aids the other to produce the desired effect on the spectator.

By means of cutting and acting, tempo and rhythm can be obtained in pictures just as in music, so if the director of the picture directs and cuts it according to the tempo of a previously selected orchestral recording the two can be made to synchronize closely enough to become almost as one.

Most orchestral compositions are really tone-poems, and to an imaginative person can depict scenes much as do word-poems. Transformed into pictures tone-poems may become cine-poems, having either plot or being merely descriptive. (This is a form of art which as yet has been little developed) except in Walt Disney's cartoons, which are excellent examples of action and cut-

(Turn to Page 27)

THE NEW



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MINIATURE CAMERA PHOTOGRAPHY

(Continued from Page 12)

ment to every negative, for business reasons will not allow the expenditure of the time required. Then again individual treatment is dependent upon the effect desired, and the finisher is not expected to interpret the desires of the photographer. The commercial finisher prints the entire negative where in some cases the composition in a portion of it would produce an outstanding print. This is another reason why he can't produce the best results, for he must not take the initiative and print his selected portions of a negative, a practice which may not be in accord with the desires of his customer.

The above is not intended to condemn the commercial finisher; he fills a definite need. Many miniature photographers do not have the time to print all their negatives. Yes, the fact that the small camera allows from about 12 to 36 exposures per loading is one reason why miniature photographers take many pictures. If we take into consideration a camera such as the new Leica FF, which allows up to 250 exposures per loading; can you wonder why the man with the miniature "shoots" them from all angles? Suppose a good enlarger is obtained by the busy individual who has a limited time to devote to printing. He can then leave the many negatives of little Bobbie going through his daily antics to the commercial finisher, and save pictorial negatives which promise interesting prints until he has some free time to print them. One of the greatest joys in miniature camera photography is doing your own enlarging.

New Speed Rating: Photographers using foreign films may have noticed a new speed rating on the packages of film. This is the new DIN system which has been instituted after the German government had arranged with the film manufacturers for an entirely new method of film speed rating. DIN stands for "Das ist Norm" which means "This is standard." The degrees denoting speed in this system are expressed as a fraction with the constant denominator "10", so as to make the new system obvious. As with Scheiner degrees each three additional DIN degrees indicate twice the speed. The new DIN system cannot accurately be compared with Scheiner degrees. The following table however will serve as a suitable guide:

SCHEINER	DIN
10	3/10
11	4/10
12	5/10
13	6/10
14	7/10
15	8/10
16	9/10
17	10/10
18	11/10
19	12/10
20	13/10
21	14/10
22	15/10
23	16/10
24	17/10
25	18/10
26	19/10

A pamphlet describing this new system more fully can be obtained by writing to Photo Utilities, Inc., 152 West 42nd St., New York City, N. Y.

Miniature Camera Salon Eugene, Inc. has announced the Third Annual Miniature Camera Salon. Here is an opportunity for the miniature camera photographer to display his wares and also have the chance to win some substantial prizes. For specific information write to Eugene, Inc., 600 Madison Ave., New York City, N. Y.

35mm. Contact Printing: Many photographers using cameras accommodating motion picture film like to make

contact prints from the small negatives. To facilitate matters contact paper can be obtained in rolls which is 35mm. wide and is supplied unperforated. Such paper rolls are made by Afga Ansco of their Convira paper. It is supplied in single weight glossy surface only, and in soft and medium contrasts.

Solution for Preservation: Last month some hints were given on the preservation of film, and it was recommended that humidifying pads moistened with water be used in negative containers. This problem is of import to workers who use motion picture film and keep their negatives in the entire roll (about five feet long) instead of cutting it up into strips. With some films, if the roll is left lying about, at the end of a few months it will be found to have shrunk to a considerably more compact roll, and will be harder to handle.

With the larger films, as the 117 and 120 size roll-films this problem will not be found to prop up.

Water used on the humidifying pads evaporates rapidly, but the following solution usually employed in motion picture work, will be found to be considerably more lasting and is excellent for the purpose.

Camphor	1 dram
Menthol	1 dram
Oil Eucalyptus	2 drams
Glycerine, to make.....	4 ounces

This solution can be made up by any druggist. If you wish to prepare it yourself use the following procedure: Place the camphor and menthol with a very small quantity of glycerine in a stoppered bottle and liquefy them with the aid of heat. As an alternative the camphor and menthol can be placed in a mortar and triturated together, which will result in their becoming liquefied. Then add the oil of eucalyptus, and sufficient glycerine to make 4 ounces. For use: dilute half with water and moisten the humidifying pads.

Photoflood Table: Winter is upon us and now is the time when longer nights afford us plenty of time to practice indoor photography. To facilitate matters I am including below a table on the Photoflood lamp which is calculated for diaphragm openings from f:1.9 to f:12.5.

EXPOSURES FOR THE PHOTOFLOOD LAMP			
Agfa Fine-Grain Plenachrome and Eastman Verichrome Films	Distance—lamps to subject	Diaphragm opening	No. of lamps in reflectors
			Time in seconds
	4 feet	f:1.9	1
	"	f:2.5	1
	"	f:3.2	1
	"	f:3.5	1
	"	f:4.5	1
	"	f:6.3	1
	"	f:9.0	1
	"	f:12.5	1
	6 feet	f:1.9	1
	"	f:2.5	1
	"	f:3.2	1
	"	f:3.5	1
	"	f:4.5	1
	"	f:6.3	1
	"	f:9.0	1
	"	f:12.5	2
	10 feet	f:1.9	1

(Turn to Page 26)

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MOTION PICTURE SOUND RECORDING

(Continued from Page 7)

bers it properly; sets the footage counters on the recording machine at zero; and then writes down on a special form card all the details, such as picture name of the number, director of the picture, film roll number, and film recording machine number. Then he turns on the current to the various film recording circuits and adjusts the rheostats to the positions that provide the proper meter readings.

When the director and cast on the stage are ready to make the take, the microphone man calls the recorder operator on the intercommunicating telephone, gives him the scene number, and calls for "interlock." The recording engineer then closes the first of the two motor switches mounted on the wall near the recording machine and turns on the recording room signal light. This motor switch interlocks the rotors and stators of all the motors in use—those on the cameras as well as the motors on the recording machines—and brings them all to the starting position.

The microphone man calls out, "Interlock!" when he sees the recording room light go on; and when everything is quiet and ready on the stage, he turns on his stage signal light and warns: "We're running."

At sight of the stage signal light, the recorder operator closes the second motor switch, which sets all of the interlocked motors into rotation. He adjusts the motor rheostat (mounted in the large metal box on the wall of the recording room) that compensates for changes in the amount of motor load on the master Selsyn motor in the generator room.

He watches the extension milliammeter in the motor control circuit (mounted on the wall just above the motor rheostat) until it shows a reading that indicates that the motors are up to their normal speed of 1200 revolutions per minute. Then he snaps on the switch that lights the room.

At this, the microphone man calls out "Speed!" The scene is "shot," the actors going through their rehearsed parts; and when it is finished, the microphone man switches off the stage signal light. When the stage light

bull's-eye *running* lights on the stage and in the recording blinks off in the recording room, the recorder operator turns off the motors by opening the two motor switches.



Strips of variable density—fixed area sound track. One strip shows a normal sound record; the other is the record of an audio frequency tone, such as produced by the oscillator on a light valve tuning panel.

He then writes down the scene number, whether or not it was satisfactory (which he learns by telephone from the microphone man), and the number of feet of film run through the recording machine. Then he makes the necessary preparations for the next take.

This concludes the series of four chapters describing the Western Electric system of recording sound on motion picture film.

WELCOME, MR. NEWMAN

Steve Newman, who will be remembered as one of the active organizers of the I. A. T. S. E. Locals, has been appointed by International President, George E. Browne, as International representative for Southern California. In this capacity Mr. Newman will supervise matters pertaining to all studio Locals of the International Alliance of Theatrical Stage Employees and Mov-

ing Picture Machine Operators of the United States and Canada. Mr. Newman has acted as assistant president of the International Alliance in place of L. G. Dolliver. He was at one time third vice-president of the I. A. T. S. E. & M. P. M. O. and on two occasions represented some of the West Coast Locals at the International Alliance Conventions. Mr. Newman is highly respected in the International Alliance as a labor leader.



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MINIATURE CAMERA PHOTOGRAPHY

(Continued from Page 24)

"	f:2.5	1	3/4
"	f:3.2	1	1
"	f:3.5	1	1 1/2
"	f:4.5	1	2
"	f:6.3	2	2
"	f:9.0	3	3
"	f:12.5	4	4

Agfa Superpan Film: Use 1/2 of the exposure shown in the table.

DuPont Panchromatic: Increase the time 50%.

DuPont Superior: Use 1/2 of the exposure shown in the table.

Eastman Panchromatic: Increase the time 50%.

Eastman Panatomic: Increase the time 50%.

Eastman Supersensitive Panchromatic: Use 1/2 of the exposure shown in the table.

Gevaert Superchrome Express: Use the same exposure shown in the table.

Perutz Neo-Persenso: Use same exposure shown in the table.

Perutz Peromnia: Use 1/2 of the exposure shown in the table.

SOMETHING NEW IN NEWSREELS

(Continued from Page 9)

make our color pictures using the double system to give us better cutting ability and also the possibility of recording sound away from the location where we are shooting, if other sound is desired. For example, while our camera is photographing various angles of a parade unhampered by the sound unit our sound recorders can concentrate on recording band music for our picture at some advantageous location best suited to them. It can readily be seen how well this works out on foreign stuff, where strange selections are played not easily reproduced elsewhere.

With a good start in what we believe to be the right direction, we hope that the new year will see our little idea developing into a reel that will be generally enjoyed. If effort will bring success, we should make good, and all concerned are happy at the thought.

Now that the depression is a thing of the past I am sure the new year will be happy. Best wishes for a joyful Christmas to you all and the **FINEST NEW YEAR OF ALL YOUR LIVES.**

MAY ALL THEIR CHRISTMASES BE HAPPY

The International Photographer, its publishers and editorial staff extend, with whole hearted appreciation, the compliments of the season to all these noble souls who have, during the past year, lent willing hands to the up-building of this publication. It is a large, distinguished and rapidly growing family and we hope that every one of them here named may be with us in the better years to come. Here they are:

Earl Theisen, Charles Felstead, Fred Westerberg, Ray Fernstrom, Lewis W. Physioc, Charles P. Boyle, Franklin Courtenay Ellis, Alvin Wyckoff, James B. Shackleford, Esselle Parichy, William Hartman, Harry Mimura, Augustus H. Wolfman, Milton Moore, George Lancaster, John Leezer, Paul Ivano, Geoffrey Hodson, Irving Akers, Rollie Tothoroh, Karl A. Barleben, Jr.,

F.R.P.S., Philip Tannura, Art Reeves, Bert Longworth, Herford Tynes Cowling, F. Morris Steadman, John Beecroft, Paul R. Harmer, Edwin S. Linden, W. Wallace Clendenin, Donald MacKenzie, Alfred C. Moore, William Horsley, Walter Bluemel, Samuel T. Shaw, Jr., May Gearhart, Lewis H. and Helen L. Davis, Richard Bare, Jack Alton, Warren M. McGrath, Carlisle Jones, Ray Flinsky, Keith LeBar, Max Dupont, Robert W. Miller, Robert Tobey, "Kodak", Jack Smith, Herbert A. Kliegl, James A. Woodbury, Billy Bitzer, R. W. Murray, Harry R. Lubcke, Paul E. Bowles, Walter Strohm, M. L. Tandon, E. W. Melson and S. Lawrence, Fred S. Tobey, S.M.P.E., The Academy of Motion Picture Arts and Sciences, Enrique Vallejo, Bob Hussey, S. Ramanathan, John L. Herrmann, Joseph Murphy.

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SOUND FOR THE AMATEUR

(Continued from Page 22)

ting set to the rhythm of music. Cartoons are, it is true, more easily manipulated to suit the music than is actual material such as the amateur works with, but he can nevertheless do much by cutting in rhythm with appropriate music. This is frequently done in modern films, as in the balcony scene with Grace Moore in the beginning of "One Night of Love." Here, of course, the music is an integral part of the action, but the same pleasing effect can be obtained with incidental music in no way connected with the action. This technique should offer interesting and worth-while opportunities to the ambitious amateur.

Modern sound pictures often contain sequences that are really silent in technique except for the accompanying music, which is far more effective than would be the sound it replaces. That is because the music has a far greater effect on the emotions than do mere discordant sounds. Thus music is often used to accompany violently dramatic action such as battles, stampedes, riots, and catastrophes instead of using the actual sounds of the action.

A number of excellent examples can be found in Josef Von Sternberg's "Scarlet Empress," especially "*Kamenov Ostroi*" in the wedding sequence and "Ride of the Valkyries" in Catherine the Great's ascent to the throne room on horseback.

In each case a certain amount of actual sound of the scenes was used, but it was kept subdued so that it merely formed a background to the music. This is often done, for in this way both the music and the actual sounds produce a cumulative effect on the spectator. Where sound or dialogue is most important, the music is kept subdued, its presence being usually unnoticed, yet it produces the desired mood in the audience.

The amateur must, as yet, content himself merely with musical accompaniment. The many excellent orchestra concerts available on the radio today will tell him what musical effects can be produced and added to his pictures by means of phonograph records.

As for the reproduction of the records, that may range from that of a simple hand-wound phonograph to special electric turntables and power amplifiers. Except for experimental purposes I would not recommend ordinary home phonographs, however, because they lack volume and naturalness of reproduction.

The best set-up, which any amateur can easily assemble, is an electric turntable (preferably one which makes both 33 $\frac{1}{3}$ and 76 turns per minute so as to accommodate electrical transcriptions as well as ordinary phonograph records), an electrical pick-up, and an amplifier with a good speaker. The turntable and pick-up can be obtained cheaply, and most any good radio amplifier and speaker such as is used in most homes, will prove entirely satisfactory.


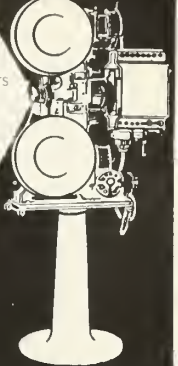
Instructions for connecting the electrical pick-up to the radio amplifier usually come with the pick-up, or it can be obtained from any radio technician. The radio amplifier usually permits volume control, which is an important feature for the most pleasant reproduction of records under varying conditions. The loud speaker should be placed behind or near the screen, so that the music seems to be coming from the screen.

If the additional expense does not matter, it is desirable to have two turntables and two pick-ups so that for long films records can be changed by changing from one turntable to the other without interrupting the music. To do this smoothly special "mixers," or potentiometers, are available which enable the operator to cut down the volume of one record as the other is increased.

With this set-up and a bit of practice it is possible

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to take excerpts from any number of records and blend them together into an excellent musical accompaniment to any film. The records can be numbered for the order in which they are to be played, and the section or sections of each record which is to be used can be marked. It is also possible to have excerpts from records re-recorded on one record or to have an entire score recorded especially for the picture if the value of the picture warrants the expense. Explanatory dialogue can likewise be added by having a special record or electrical transcriptions made of it. Synchronization of the dialogue to the picture is, of course, difficult, but where the dialogue is merely explanatory it need not be in perfect synchronization. It is, however, fun to try to synchronize home recordings, made on special home recording records, with pictures, though this method can never be satisfactory for permanent reproduction.

By using a microphone in place of the pick-up explanatory dialogue can be easily added to a picture. This, of course, requires an announcer every time the picture is shown with dialogue. He can be out of hearing range of the audience but within sight of the picture and can read a previously written script explaining the picture.

With a little rehearsal he can synchronize his explanations just as done professionally in the travelogues of Pete Smith and J. P. Medbury, the Universal Newsreels with Graham McNamee, and the Fox Movietone Magic Carpets and newsreels with Lowell Thomas. When the picture is based upon a poem the poem can be read in accompaniment to the picture, and the picture may even be given the same rhythm as the poem. Humorous effects can be obtained if the announcer speaks the dialogue the characters on the screen are supposed to be speaking, as in the Pete Smith Goofy Movies, and lots of fun can be had by having each character in the picture speak his own part through the loudspeaker. Music can also be used as a background to the dialogue, this requiring a volume control for both pick-up and microphone so that the music will not drown out the voice.

For the amateur who wishes to spend a little more money there are available a number of portable and semi-portable public address systems which have both turntable and microphone pick-up.

Each amateur is confronted with his own problems, and it would cover too big a scope for me to discuss all of them even if I knew what they were, so I can merely point out a few of the possibilities for the amateur to add sound to his pictures. If he finds that his pictures are lacking in interest, and that he himself is losing interest in picture-making, I suggest that he try adding sound to them in whichever way meets his particular problems and I am sure he will find many new and interesting things to do with his hobby.

FROM ARISTOTLE TO EASTMAN

(Continued from Page 16)

negatives are "fixed" today, and the light areas of the scene in front of the camera appeared mercury-white, whereas the dark areas appeared in the black metallic silver of the plate's surface.

After Daguerre's first success in recording permanent camera pictures, a newly devised portrait lens and the addition of bromine to the iodine helped to speed up the process of photography—even had sped it up, by the middle forties, to the point where Miss Draper could be photographed in ten minutes!

Fox Talbot, in England, took the next step forward. He made pictures on paper coated with silver iodide instead of on silver treated with iodine, and he used no mercury in development. Therefore the image was a negative one instead of Daguerre's positive image, and it was possible by an extremely long exposure through the paper negatives to print positives—just like the prints that are made from Kodak negatives today.

Glass became the accepted photographic medium after the English sculptor, Scott Archer, had invented the wet collodion process in 1851. That method was used practically exclusively for making negatives from 1860 to 1880. Photography as practiced today may be said to be evolved mainly from the work of Wedgwood and Fox Talbot. Daguerreotypy ceased in the early eighteen fifties.

Eastman

An amateur photographer in the twenty years preceding 1880 was a queer person: for he had to think it fun to go out on a photographic expedition carrying a bulky camera, a heavy tripod on which to rest his camera for the necessary long exposures, burdensome and breakable plates, a "dark tent" for loading and sensitizing and then developing his plates, a nitrate bath, and a water container. This was because plates had to be used wet in the camera. Difficult. Messy.

It was at this stage of the development of photography that the prophet of modern photography entered. George Eastman was a bank clerk in Rochester with an active interest that turned to amateur photography—amateur photography of just the cumbersome sort that has been described.

In an English magazine George Eastman read a discussion of the possibilities for gelatine dry plates to supplant wet plates. This would make photography a simpler thing. Eastman's inventive turn of mind was set off in that direction, and in a small hired room over a shop he spent his nights experimenting to make dry plates. He devised an apparatus to coat dry plates mechanically, and in 1880 he began to manufacture and sell them.

The Search for Film

Dry plates "scrapped" the dark tent, the nitrate bath, and other complications of the field equipment, and made results somewhat less dependent on skill. But plates, whether wet or dry, were heavy and breakable. Professional photographers remained by far the largest customers of the new dry plate industry. Further simplification was necessary if photography were to be made the easy operation which, even then, was in Eastman's mind.

The need of amateur photography seemed to be a film, which would do away with glass plates altogether. The first step in that direction was a roll of paper on which the light-sensitive emulsion was coated. After development, the roll was greased and printed through. But this, again, was not the perfect solution that Eastman envisioned.

The Eastman "stripping film" was devised—a temporary paper base coated with soluble gelatine which in

turn was coated with the sensitive gelatine emulsion. When the negative was immersed in water the image could be stripped off and transferred to a transparent gelatine skin; but the process was delicate and had to be undertaken by expert hands.

Meanwhile the roll film idea had evolved a new type of camera. The first Kodak appeared in 1888, the invention of Eastman, who also coined the name "Kodak." This first Kodak took round pictures 2½ inches in diameter and was loaded for 100 exposures. Compared to the folding pocket instruments of today it was a crude affair; but compared to the burden of equipment which only a few years before had confronted amateur photographers it was a miracle of achievement. For the picture-taking itself no technical skill was required. "You press the button, we do the rest," put the simplicity of operation into a phrase. The "rest" included unloading and reloading the Kodak back at the factory, developing the roll of film, stripping and mounting it, and printing the pictures—in addition, of course, to having manufactured the film and the photographic printing paper in the first place.

The discovery of a transparent, flexible film base to supplant the paper rolls long eluded capture. But in 1889, after years of experiment and research, Eastman and his staff succeeded in making commercially practicable the present celluloid base by dissolving nitrated cotton in alcohol. When it was dried and sensitively coated, this became the film with which Kodakers have long been familiar.

Subsequent Improvements and—the Movies

Daylight loading for cameras was patented in 1891 and was put on the market the following spring. Daylight developing, introduced in 1902, completed the present Kodak system of photography except for refinements. By also coating the non-emulsion side with gelatine the film in 1903 was made easier to handle because of its non-curling properties.

Verichrome Film, a double-coated material introduced in 1931, is proving very advantageous to amateur photographers by lengthening the snapshot day. Super-sensitive panchromatic film, likewise introduced in 1931 by the Eastman Kodak Company, has greatly increased the possibilities for photography and cinematography under artificial light.

The discovery of film not only revolutionized photography, but also made motion pictures possible. Edison, struggling in his West Orange laboratory to devise a machine which would reproduce motion visually, heard of the Eastman discovery in Rochester and sent his famous assistant, Dickson, to investigate it. Dickson took a strip of the new transparent and flexible substance back to West Orange and showed it to Edison.

The man who was to become the most famous of the motion picture pioneers looked at it for a moment, then said: "That's it. We've got it. Now work like hell."

The purchase memorandum for that first strip of film is still in the files of the Eastman Kodak Company, dated September 2nd, 1889.

The launching of the movies as a commercial institution, which came several years later, established one of the world's enormous industries. One indication of the motion picture industry's magnitude is the fact that the Eastman Kodak Company's annual production of motion picture film in the United States alone amounts to 200,000 miles.

X-ray photography, another major photographic de-

velopment, mentioned in but a sentence here, has been a civilizing agent of enormous importance.

An important photographic improvement, especially for the motion picture art, came in the introduction of panchromatic film. "Panchromatic" was derived from the Greek to mean "all colors."

Photographic emulsions originally were predominantly sensitive to blue, violet, and ultra-violet, being practically unaffected by red, yellow, and green. Hence the red light in photographers' darkrooms. Hence our accustomed expectation of seeing red and yellow record in photographs with the same tone value as black.

Panchromatic emulsions, on the contrary, are sensitive to all colors of the visible spectrum. The improvement in photographic rendering that resulted from this change was very marked.

The introduction of panchromatic emulsions a number of years ago is not to be confused with the introduction of super-sensitive panchromatic emulsions in 1931, to which allusion has already been made and which will be described further on.

Home Movies

"Home movies" are a comparatively recent development. They entered the scene when motion picture cameras were made to use film less than half as wide as standard motion picture film and when the "reversal process" was perfected. These two elements reduced the expense so materially that now many scores of thousands of families have their own motion picture cameras, and numerous "libraries" supply photoplays on "narrow gauge" film so that home projector owners may have additional entertainment to supplement the motion pictures they themselves have made.

The reversal process is one by which the very film exposed in the camera is finished, in developing, not to a negative, but directly to a positive which may be used in the projector. One of the merits of that, of course, is that it saves exactly 50 per cent of the necessary film, since it eliminates the use of a separate negative. As practiced by the Eastman Kodak Company, the reversal process permits of enormous latitude of exposure in the camera, and yields a positive picture of fine quality.

This was the stage upon which appeared the most remarkable of the developments in simplification of photography and in the increase of its scope. Amateur motion pictures in full natural color, introduced in 1928, were no more difficult to take by the Kodacolor process than snapshots. The operation was even very much simpler than amateur photography, crude though that was, at the time when picture taking entered its industrial phase with the advent of George Eastman.

Super-Sensitivity

The year 1931 was a period of very important developments in photographic science. Amateur movies in natural color were a more magically amazing phenomenon, but the super-sensitive panchromatic photographic emulsions of 1931 were destined to have a broader effect on the diversified uses of photography.

Discovery by the Kodak Research Laboratories of new dyes which were used for "speeding up" panchromatic film quickly showed results in the motion picture industry, in studio photography, in general commercial photography, in news photography, in astronomical photography, and in home movie making. Most recently, the new super-sensitivity has been applied to permit greater speed, and consequently still greater simplicity, for Kodacolor.

Increased speed, in photographic terminology, means the ability to expose a photographic image with less light; or, using the same amount of light, to get the same photographic result with a shorter exposure. By daylight,

the speed of super-sensitive panchromatic film is about twice as great as for ordinary panchromatic. By artificial light, the increase in speed effected by the discovery was three times or more because the increase in light sensitivity of the new emulsions was greatest in the red and yellow parts of the spectrum. Red and yellow are present proportionately more in artificial light than in daylight.

Better photography is not the only possible result of this new development. Decreased costs in professional cinematography and studio photography have been brought about by the reduction of necessary lighting. Commercial photographers have been enabled to make industrial pictures which the impossibility of adequate lighting previously prevented. Amateur cinematography inside the home has attained a new level of practicality. Such is the effect of the Eastman Kodak Company's constant photographic research.

After lying as a dormant possibility since the beginning of civilization, photography in a century has come an amazingly long way. With photography as a tool and a plaything, homes are happier, the world knows itself better, medical and dental treatment has been improved, scientific investigation has been sped up, business has been simplified in many ways.

Where, further, photography may go no one can even guess. Daguerre could not see the future. Eastman could only glimpse it.

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MISCELLANEOUS

COMPLETE COURSE IN FLYING—If interested in aviation, see Roy Klaffki, 1605 North Cahuenga Ave., Hollywood.

WANTED—To know of the whereabouts of motion picture relics, documents, or equipment of a historical nature for Museum purposes. Write Earl Theisen, care of International Photographer, 1605 Cahuenga Ave., Hollywood.



By EARL THEISEN

Associate Los Angeles Museum,
Department Motion Pictures

Associate Editor International
Photographer

Hollywood Note Book

UTOGRAPH collectors! The most unusual collector is Courtney McLeod, mail clerk at Metro-Goldwyn-Mayer. He is paid by the studio to collect the signatures of the film-folk, and he spends his time having them sign for registered mail. And sign they must!

That brings to mind the registered mail racket in which worthless items are sent to persons at the studio by registered mail with a return receipt requested. A few days later a bill is rendered. Marion Davies signed for a package one day in which was found a bit of dime store pottery. Later she received a bill in three figures for a "priceless bit of antique art." Norma Shearer had a similar experience with a sketch of herself sent by an admirer.

The studio writing departments, or the writers themselves, are shy about signing for registered mail. In the past the studios have been taught that to accept such material is to invite a lawsuit. Unknown writers are in the habit of suing the studios for plagiarism. Too, at times some writers, perhaps unknowingly, copy the plots of stories they have read.

The studios have long refused to accept uncopyrighted or unsolicited material.

One of the smallest schools is the legally constituted and regularly conducted school on the R. K. O. studio lot which has a student body of only one member. That student, the only minor at this studio, is Anne Shirley. Under the law, all minors must attend school so the studios maintain schools that parallel the work done by pupils in the regular city schools.

Metro-Goldwyn-Mayer plans to do a series of short subjects in Technicolor based on Song Classics of the most popular songs of this and the past generations. The first to be made will be "My Old Kentucky Home," which is to be based on the life of its composer, Stephen Collins Foster.

That sounds like a very good idea, but like the puppy that tried to run down the Ford, what could the pup do after he caught it? The dear box-office, even though they instigate church drives, doesn't seem to want to pay to see solid stuff. There is nothing like a red-blooded film plot to relieve the itch from curiosity of these vertebrate members of society, and the film producers are not philanthropists but business men who make products that sell. The soul of propriety, who likes to live in the sun also likes to peek in the shadow of the theater for delicate speculations. Maybe I'm wrong, but I can't help but think the unbad persons like to go to see ungood pictures.

Out at Columbia Studio, persons are getting money for doing nothing but laying in bed. They are working in the hospital sequence of "Broadway Bill."

Roamings—I saw Emery Huse, Joseph Dubray, Gordon Chambers, Gerald Rackett, and Myself, the adverb addict, at the Levy Cafe talking about something. Also I saw at the Van Nuys Women's Club, Madge Bellamy, who gave a talk, and I believe I looked at her too much which didn't occur to me at the time. (By the way, I was there to talk too! But that's not what I meant to say.) Madge Bellamy made some very "keeping" remarks. She said the motion picture will never be any better than the public for which it is made. All the churches, clubs, and king's horses can do nothing about bettering the social aspect of the pictures unless they first educate the audience. Her statements were greeted as Sir Walgenbach would say, "with loud, or I might say raucous cheers. At this same function Rhylis Hemington, the Public Relations counsel for Fox-West Coast Theaters told how those audiences could be educated by introducing motion picture courses in the school curricula. "Very, very swell!" say I.

The women stars who are under twenty-one must do their business through guardians appointed by the Superior Court. That is California law.

Iris Adrian, born and raised in Hollywood, could not even get in a studio much less before the camera. All the castings directors turned her down so she went to New York to dance in a night club where she was spotted and grabbed up and rushed to Hollywood. Now she is being described (rightly) by the studio press agents as vivacious, flaming-haired, vibrant with energy, and surcharged with sex appeal; and other juicy adjectives. Oh, well—

Francis Wright, whom I and others admire, reported a novel form of theater. It is the "drive-in" open air theater at Westwood and Pico Streets, Los Angeles, where the audience sit in their autos while viewing the films. I wondered if those leaving in the middle of the show had to climb over the persons next, but was told: "No, it is possible to drive out at any time."

Now, from your car, you may buy groceries from the "drive-in" markets, eat your lunch or dinner in "drive-in" barbecue stands, sleep in your car, listen to radio programs from all points of the globe, and in fact do everything in the car except take a shower and change your clothes.

On the night of December 6, the Motion Picture Section of the Los Angeles Museum will be open to the picture colony and its friends. This activity is sponsored by the Society of Motion Picture Engineers. The special motion picture night at the museum should be of interest. Come on down. Be there at seven-thirty.

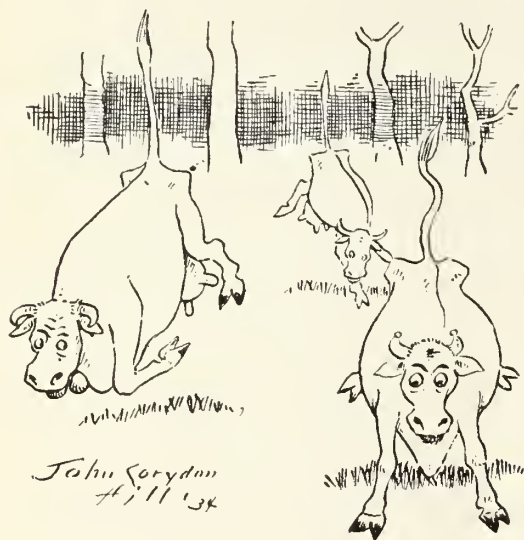
Frank Capra, you know, the ace director, recently had an operation for appendicitis. When he came out from under the ether he found a telegram from Robert Riskin, who writes the screen plays for Capra, which said: "Sorry I couldn't be at your opening."

English actors are going Hollywood and Hollywood actors are going English. More than that the English actors are coming to Hollywood to do it while the Hollywood actors are migrating in large numbers to England. There are about eighty English actors at work in the local studios at present.

Out of Focus

By JOHN LEEZER

Pinch Hitting for Charles P. Boyle ("Otto Focus")



I wasn't workin' in the picture, but Sam, my son-in-law, was goin' to direct it an' he wanted me to go along on location up in the mountains. So I did.

They was goin' to make a "Horse Opera" with a stampede of cattle in it. Sam told me that "horse opera" wasn't singin' horses but just another name for a Western picture. Never saw a stampede but couldn't figure out how they was goin' to have it in the mountains. Sam explained that if they had the stampede in the timber, they wouldn't have to have so many cattle. Twenty-five, he figured, would make it look like the woods was alive with 'em.

As I said before, I never saw a stampede but I have always had an idea that the cattle gallopin' 'round over the western plains was not the same kind we used to let the bars down for, night an' mornin', back on the farm. That is, I figured they was all gentlemen cows, or had been, but these animals that Sam had was all supplied with milk reservoirs. Another thing that I reckoned about a stampede was that the critters takin' part in it ought to be hittin' 'round 20 or 25 miles an hour, but they couldn't get these Holsteins an' Jerseys out of a walk, an' no two of 'em in the same direction at the same time. They tried to scarce 'em with red flags, roman candles, dogs an' firecrackers, but no stampede. An' Sam's goat got loose but that didn't start 'em either.

They hadn't started up to lunch time, but while we was settin' 'round eatin', there was a loud snort back in the woods an' then that bunch of onery critters, with their tails in the air, come tearin' down right past the fotografin' machine. Sam was so flabbergasted that he couldn't say a thing an' besides his mouth was full of gooseberry pie, that bein' the handiest place to put it when the stampede come. But as soon as he could, he broadcast to the world that he would give \$5 to know what scared 'em. As everybody else wanted to know the same thing, it wasn't long before we was headin' in the direction the dairy had come from.

A little red-headed feller was leadin' the procession an' he was soon out of sight in the brush. But he didn't stay there very long. Never heard an Indian yell, but that little feller must have given a pretty good imitation, an' then we saw him comin'. He was hittin' the ground only about every third jump an' yellin' "It's a bear! It's a bear!"

Sounded somethin' like a song I heard on a grafafone a long time ago. Everybody felt like runnin' but as no bear showed up, nobody started. The imitation blonde leadin' lady wanted to know if he had really seen a bear.

"Look!" says he in a weak voice, an' sure enough, out comes a real live bear—the first one I had ever seen outside a cage.

Well, the trees was too big to climb but there was plenty of room to run in an' I reckon there would have been some hoofin' records smashed then an' there, if the cameryman they called George, hadn't spoke up an' says, "Hold on folks, I know that bear."

"What do you mean, you know the bear?" says Sam.

"Why I have worked with her in pictures before," says George, an' he went over to meet the animated rug.

The critter seemed glad to see him an' before long we was all edgin' up just to be sociable like. George reckoned that some other movin' picture company had been usin' the bear somewhere about there an' that she had got tired of 'em.

"Well, anyhow," says Sam, "as soon as we get the cattle back we'll make the stampede."

P. S.—But they never got the "cattle" back.

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